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Permit Fact Sheet

General Information

Permittee Name:	Wausau-Mosinee Paper Corporation Rhineland Paper Company, Inc.
Facility Location and Mailing Address	Rhineland Paper Company, Inc. 515 West Davenport Street Rhineland, Wisconsin 54501
Permit Number	WI-0003026-7

Receiving Water and Discharge Locations	Rhineland Paper discharges to the Wisconsin River (river mile 341.3) via six outfalls. Outfalls 004 (contact cooling water), 012 (primary collection tank emergency overflow) and 010 (condenser cooling water) discharge to the head race canal between the Phillips Street bridge and Rhineland Paper's hydroelectric plant in Rhineland. Outfall 011 (combined primary and secondary clarifier effluents) discharges to the tailrace of the hydroelectric plant. Outfalls 016 (river water inlet clarifier) and 021 (river water inlet wet well) discharge to the river channel just downstream from the Phillips Street bridge. The river channel, which has little flow, parallels the head race canal.
Stream Flow	The Wisconsin River at Rhineland has a $Q_{7, 10}$ of 304 cfs.
Stream Classification	Full fish and aquatic life (warm-water sport fishery)

Facility Description

Rhineland Paper produces slightly less than 500 tons per day of technical specialty papers from purchased pulp. Currently, the facility operates four paper machines and performs silicone coating on two off-machine coaters. Rhineland Paper ceased sulfite pulp production in 1984.

Rhineland Paper's specialty papers are used by other manufactures in many food, medical and industrial applications. One of Rhineland Paper's products, a supercalendered backing paper, is used as the base from which peel-and-stick, pressure sensitive labels are dispensed. The backing paper is designed for high-speed labeling machines that apply labels to containers of consumer products such as shampoo and deodorant.

Rhineland Paper's Lakes States Division produces torula yeast using purchased corn syrup, molasses and spent sulfite liquor as the food source. After the fermentation process is terminated, Lakes States separates the torula yeast from the fermentation broth with a series of centrifuge extractors, washes the yeast, and then dries the yeast in cyclone dryers. Other manufactures use Lakes States' torula yeast in processed foods, pet foods, and industrial fermentations to add flavor, increase umami sensation, and fortify nutrition. Lakes States produces approximately 1,800 dry tons of torula yeast a year.

Ancillary operations at Rhineland Paper include the production of steam and generation of electricity. Rhineland Paper utilizes six coal-fired and one gas-fired boiler to produce steam. While most of the steam is used to produce paper, some is used to generate electricity via three steam turbines. The three turbine/generator sets (Numbers 3, 5 and 6) have a total capacity of 23 megawatts (MW). Rhineland Paper's hydroelectric plant produces additional electricity with three hydroelectric turbines providing a total generating capacity of 2.75 MW. Rhineland Paper generates electricity continuously and uses all of the electricity that it generates.

Discharge Description

Contact Cooling Water (Outfall 004): Discharge from Outfall 004 consists of stormwater, noncontact cooling water, and, occasionally, process wastewaters other than noncontact cooling water. Treated and untreated river water is used for cooling. Water treatment additives include chlorine, alum and polymers. Noncontact cooling water sources include the paper mill, coated products plant, yeast plant, boiler house and turbine room. Specifically, sources include, but are not limited to, No. 9 Paper Machine V.I.B. unit, a supercalender, supertrol units, control center air conditioning units and steam turbine oil coolers.

Over the term of the current permit, Rhinelander Paper has reduced the discharge from Outfall 004. During a trial in the spring of 2003, all process wastewater, including cooling waters, were eliminated, which reduced the discharge to less than 0.1 million gallons per day (MGD). See Attachment I, page 27 for more discharge information.

Condenser Cooling Water (Outfall 010): Discharge from Outfall 010 consists of once-through condenser cooling water from No.5 Steam Turbine. Rhinelander Paper withdraws and returns the cooling water to the Wisconsin River without treatment. No additives are used. The discharge from Outfall 010 averages 8.67 MGD. Peak discharge temperatures have reached 84°F. See Attachment I, page 27 for more discharge information.

Number 3 Steam Turbine also requires condenser cooling water, but the cooling water is reused in the mill and not discharged to surface waters..

Number 6 Steam Turbine is a non-condensing turbine and, therefore, does not discharge condenser cooling water.

Primary Collection Tank Overflow (Outfall 012): As part of its wastewater treatment process, Rhinelander Paper segregates low and high-strength process wastewaters. Low-strength waste streams are routed to the primary collection tank and high-strength waste streams are directed to the secondary collection tank. Low-strength waste streams include coated products operations wastewater, boiler house wastewaters including boiler blowdown and demineralizer regeneration wastes, settled solids from the inlet (intake water) clarifier, filter plant backwash, roof drainage from the buildings that house Nos. 6, 7 and 8 Paper Machines, and low-strength wastewaters from paper making (i.e., paper machine U-drains and contact cooling waters). High-strength waste streams include paper making wastes such as saveall overflow, excess whitewater, size press wastes, and boil-out wastes, and yeast plant waste streams such as wash waters, spent fermentation broth.

Both collection tanks are equipped with overflow weirs. The secondary collection tank overflows to the primary collection tank. The primary collection tank overflows to the Wisconsin River via Outfall 012. Discharge via Outfall 012 occurs during Rhinelander Paper's annual mill shutdown, as a result of mechanical or power failures, and during heavy rains that overwhelm the lift pumps required to transfer the collection tank's contents to the primary treatment system.

In the last six years (1997 through 2002), discharge from Outfall 012 has occurred on 4 to 8 days per year. Annual mill shutdowns typically result in 3 to 4 days of discharge each year. During mill shutdowns, Outfall 012 is used when Rhinelander Paper must clean or repair the primary collection tank or primary clarifier. Discharge via Outfall 012, other than during mill shutdowns, is usually less than one hour in duration. See Table 2 of Attachment I, page 29 for more discharge information.

Treated Process Wastewaters (Outfall 011): As indicated earlier, Rhinelander Paper treats its low-strength and high-strength process wastewaters separately, the former in the mill's primary treatment plant and the latter in the secondary treatment plant. After combining effluents from the primary and secondary treatment plants, Rhinelander Paper discharges its treated process wastewater to the Wisconsin River via Outfall 011.

Rhinelander Paper's primary treatment plant neutralizes and clarifies low-strength wastes. Lime and alum are added at the primary collection tank to adjust pH. From the collection tank, the low-strength wastes are pumped to a 165-foot-diameter clarifier where solids are settled with the aid of polymers.

Rhinelander Paper's secondary treatment plant provides neutralization, equalization and biological treatment for high-strength waste streams. Lime for pH adjustment and ammonium hydroxide as a nutrient are added at the secondary collection tank. From the collection tank, the high-strength wastes are pumped to a 0.5-million-gallon (MG) equalization tank. The equalization tank is equipped with coarse bubble diffusers to reduce odors. From the equalization tank the high-strength wastes flow to a 1.2-MG aeration basin that is equipped with fine-bubble

diffusers. Rhinelander Paper maintains a second 1.2-MG aeration basin with surface aerators in reserve. Two 70-foot-diameter clarifiers, operated in parallel, provide final settling.

Rhinelander Paper combines settled solids from its primary treatment plant clarifier (primary clarifier) and waste activated sludge from the secondary treatment plant final clarifiers (secondary clarifiers), at ratios varying from 2:1 to 4:1 (dry weight basis). Following polymer addition, the combined solids are thickened on a 2.2-meter gravity belt thickener and dewatered on a 2.2-meter belt filter press to a solids content of 23 to 27 percent. Thickener and filter press wash waters and filtrates are returned to the primary clarifier.

Rhinelander Paper also treats 7,000 gallons per day (gpd) of landfill leachate from the Pine Lake Landfill, which it owns and operates. The leachate is trucked from the landfill and unloaded at the secondary treatment plant's aeration basin.

Rhinelander Paper periodically adds a defoamer to wastewater treatment plant effluent. Defoamer is used when boil-out wastes are discharged to the primary treatment plant and when foam is observed in the primary clarifier effluent trough or in the discharge from the primary clarifier effluent sampler. Rhinelander Paper adds the defoamer to primary clarifier effluent at the effluent channel drop.

Effluents from Rhinelander Paper's primary and secondary treatment plants are combined and discharged to the Wisconsin River via a system of diffusers. One diffuser is located in each of the three turbine tailraces of Rhinelander Paper's hydroelectric plant. Each diffuser has a valve, which allows wastewater to be directed to the tailrace of the operating turbine. Rhinelander Paper directs its discharge to one diffuser at a time as part of their standard operating procedures. Each diffuser has two 8-inch diameter ports. (There is conflicting information in the Department's records on the size of the diffuser ports. Rhinelander Paper measured the diffuser ports on April 29, 2003 and found them to be 8 inches in diameter.) The ports diverge at a 45-degree angle on a horizontal plain and direct the discharge parallel to the river's surface.

In 1992, the Department concluded that the diffuser system qualifies for a chronic mixing zone of 100 percent of the 7-day Q10 and for a zone of initial dilution (ZID) that provides a dilution of 8.9 to 1 within 1.9 meters of a diffuser.

During 2002, discharge from Rhinelander Paper's wastewater treatment plant averaged 8.95 MGD, 12.1 mg/L BOD₅, 11.9 mg/L TSS, and 0.63 mg/L total phosphorus. This is excellent effluent quality for a paper mill. See Attachment I, page 27 for more discharge information.

Land Application of Wastewater Treatment Plant Sludge (Outfall 017): Rhinelander Paper land applies most of its wastewater treatment plant sludge on agricultural sites. The mill also delivers some of its sludge to the Oneida County Landfill for composting. Oneida County commercially distributes the composted material. From 1996 through 2002, the total amount of sludge that Rhinelander Paper land applied increased from 17,700 to 27,700 cubic yards per year. This mirrors an increase in sludge production due to the mill's increased paper production, use of clay filler in some of its paper, and increased number of development projects. Rhinelander Paper reports that due to its recycling efforts, sludge production for 2003 is down by 25 percent. (See page 37 for more information.)

Inlet Clarifier Drainage (Outfall 016): Each year during summer shutdown, Rhinelander Paper drains its river water clarifier (Inlet Clarifier) for inspection and repair. Two outlets are used to drain the circular clarifier. One outlet, the bottom drain, is normally used to remove settled solids from the clarifier. When the inlet clarifier is being drained, this outlet discharges to the primary wastewater treatment clarifier.

The second outlet is located on the clarifier's side wall approximately one foot above the clarifier floor. The floor slopes down to the middle of the clarifier where the bottom drain is located. The second outlet discharges to Wisconsin River via Outfall 016.

Rhinelander Paper drains the inlet clarifier in the following manner:

- Solids are continuously withdrawn from the inlet clarifier beginning 2 days prior to draining.
- Alum and polymer additions are halted two clarifier turnovers prior to draining. Depending on the rate of flow through the clarifier, two clarifier turnovers will take 20 to 25 hours.
- Clarifier drainage is initiated by shutting down the intake water supply pumps. Chlorine addition to the clarifier's discharge trough is also halted at this time.

- Both outlets are then used to drain the clarifier until the differential head becomes inadequate to use the bottom drain.
- The side-wall outlet continues to drain the clarifier until high solids concentrations are encountered and the outlet is closed. Solids concentrations are established visually by an operator stationed at the outfall.
- The remaining contents of the clarifier are pumped out via the bottom drain with a portable pump that discharges to the primary clarifier collection box, or by pumper trucks.

During the 2002 plant shutdown, inlet clarifier drainage was discharged via Outfall 016 for a single day. The discharge of 3.83 MGD contained 1.31 mg/L BOD₅, 8.23 mg/L TSS and 0.15 mg/L total phosphorus. See Attachment I, page 27 for more discharge information.

River Water Intake Structure/Wet Well Drainage: In addition to draining the inlet clarifier during summer shutdown, Rhinelander Paper also drains the river water intake structure/wet well (Intake Clarifier Pump Station Wet Well). Discharge from the intake structure/wet well, approximately 0.22 MG, occurs over a single day. The outfall for this discharge is not identified in the current permit.

Rhineland Paper drains the intake structure/wet well in the following manner:

- Notify the Department prior to draining the clarifier inlet sump.
- Shut off alum and polymer feed to the inlet sump a minimum of 20 to 25 hours prior to shutting off filtered water to the mill.
- Close the recirculation valve from the clarifier fill pipe.
- Lower the inlet building steel gate to close off the flow of intake water from Boom Lake.
- Open the inlet sump drain valve.

Storm Water Runoff Outfalls: Rhinelander Paper discharges storm water to the Wisconsin River via Outfalls 004 (contact cooling water), 011 (treated process wastewater), 012 (primary collection tank overflow), an outfall near the pump house (Outfall 1), an outfall near the secondary treatment plant (Outfall 2), and an outfall located beside the Davenport Street entrance gate (Outfall 3).

Sanitary Wastes: Rhinelander Paper discharges its sanitary wastes to the City of Rhinelander.

General Approach to Some Proposed Permit Conditions

Permit Format: The Department's new computer program, the System for Wastewater Applications, Monitoring and Permits or SWAMP, was used to generate the proposed permit reissuance. The Department also uses SWAMP to generate Discharge Monitoring Reports (DMRs), track compliance and store discharge data. SWAMP greatly affects the proposed permit's format and, occasionally, its content.

SWAMP always organizes the permit in the same order. Following the permit's title page and table of contents are influent (intake) monitoring requirements, in-plant monitoring requirements, surface water discharge monitoring requirements and effluent limitations, land application requirements, compliance schedules, standard requirements and a summary of reporting dates.

Another characteristic of SWAMP is its use of sampling points. Throughout this document, the terms "outfall" and "sampling point" have the following meanings. An outfall is a point source, which means a discernible, confined and discrete conveyance from which pollutants may be discharged to Wisconsin's waters. Examples of outfalls include a pipe, ditch, channel, tunnel or conduit that discharges to a river.

A sampling point is the point at which an influent, in-plant waste stream or effluent is sampled or monitored. For example, a Parshall flume that is located down gradient from a secondary clarifier, but upgradient from the mouth of the discharge pipe represents a sampling point. The mouth of the discharge pipe is the outfall. Sampling points may or may not be located at the actual point of discharge to the surface water or groundwater. Also, it is quite possible for a WPDES permit to identify more than one sampling point for monitoring effluent that is discharged from a single outfall.

When a discharge to surface waters is monitored at more than one sampling point, the sampling point nearest the outfall is usually addressed in the permit's "Surface Water Requirements" section and is usually identified with the same number as the outfall. Any additional sampling points are usually addressed in the permit's "In-Plant Requirements" section.

Mercury Permit Conditions: The proposed permit requires mercury monitoring and a pollutant minimization program (PMP) pursuant to s. NR 106.145, Wis. Adm. Code, which became effective November 1, 2002. When fewer than twelve monitoring results are available at the time of permit reissuance, the rule requires either monthly or quarterly mercury monitoring as a condition of the reissued permit. Monthly monitoring is required if the Department determines that a net discharge of mercury is likely. Lacking evidence of a net discharge, quarterly monitoring is required unless the Department determines there is little risk that the discharge contains any mercury. If monthly monitoring is required, the rule also requires permit conditions that trigger a PMP if the first 24 months of permit-required monitoring demonstrate that a water quality-based effluent limit will be necessary for mercury.

In light of s. NR 106.145, the proposed permit requires monthly mercury monitoring and a PMP for the following reasons. Only three test results for mercury are currently available for Outfall 011. While all three results are non-detects at 15 ng/L, the Department has found that mercury is almost always present in process wastewater discharges from pulp and paper mills when more sensitive test methods are used. Further, Rhinelander Paper has not provided any monitoring data for mercury in its intake water. If this information was available and the levels of mercury in the mill's intake exceeded those in the discharge, the Department would likely propose quarterly monitoring.

The proposed permit also requires Rhinelander Paper to collect and analyze samples for mercury according to the requirements of subs. NR 106.145 (9) and (10). That is, sample collection methods shall be consistent with "EPA Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels, EPA-821-R-96-011." Further, Rhinelander Paper shall collect and report the results for one field blank for each day that a discharge sample is collected for mercury. An analytical method capable of quantifying mercury at the concentrations found in the discharge sample or down to 1.3 ng/L, whichever is greater, must be used (i.e., EPA Method 1631). A concentration of 1.3 ng/L equals the lowest water quality criterion for mercury pursuant to ch. NR 105, Wis. Adm. Code.

The proposed permit allows the monitoring frequency for mercury to be reduced from monthly to quarterly if the following conditions are met:

- At least twelve months of monitoring results are available;
- The monitoring results meet the sampling and analysis requirements of ss. NR 106.146 (9) and (10);
- At least 11 of the monitoring results are above the limit of detection;
- Rhinelander Paper requests the reduced monitoring frequency;
- The Department grants the reduced monitoring in writing.

The proposed permit allows the elimination of the mercury PMP and the corresponding compliance schedule if the following conditions are met:

- The monitoring results meet the sampling and analysis requirements of ss. NR 106.146 (9) and (10);
- At least twelve monitoring results are available;
- The monitoring results are spaced out over a period of at least two years;
- Rhinelander Paper demonstrates that pursuant to s. NR 106.05 water quality-based effluent limitations for mercury are not necessary; and
- The Department agrees with Rhinelander Paper's demonstration and informs Rhinelander Paper in writing that the PMP requirement does not become effective.

If after 24 months of monitoring it appears that water quality-based effluent limitations for mercury are necessary, Rhinelander Paper may want to request an alternative mercury effluent limitation. Such a request must be included with the application for permit reissuance when the proposed permit expires in 2008.

Rhinelander Paper is encouraged to collect and analyze river water (intake) samples for mercury at the same time that effluent samples are collected. Unfortunately, it is quite common to find mercury in Wisconsin's surface

waters at concentrations that exceed water quality criteria. If Rhinelander Paper detects mercury in its discharge, intake monitoring will reveal whether there is a net discharge of mercury. The Department normally imposes water quality-based effluent limitations for mercury only when discharge levels exceed intake levels. Even if a limit is necessary, however, intake-monitoring results are still useful since they may be used to establish the mercury discharge limit. When background levels in the receiving water exceed water quality criteria, the water quality-based effluent limitation may be set equal to background levels.

2,3,7,8-TCDD Permit Conditions: In its application for permit reissuance, Rhinelander Paper reported detectable concentrations of dioxins and furans in its discharge from Outfall 011 (combined primary and secondary clarifier effluents). Four congeners of dioxin, including 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (2,3,7,8-TCDD), and five congeners of furan, including tetrachlorodibenzofuran (2,3,7,8-TCDF), were detected. None of the detected values are greater than the test method's minimum levels (ML), however. That is, none of the test results are quantifiable. None of the 2,3,7,8-substituted congeners of dioxin and furan were detected in a second discharge sample from Outfall 011. (The effluent samples were collected November 29, 2001 and June 1, 2002.)

By using the detected values from the first effluent test and substituting a zero for all non-detects, a 2,3,7,8-TCDD toxicity equivalence (2,3,7,8-TCDD TE) concentration of 5.4 pg/L may be calculated (see Attachment III, page 35). Averaging the results of both effluent tests, after substituting a zero for all non-detects in the second test, produces average effluent concentrations of 2.4 pg/L 2,3,7,8-TCDD and 2.7 pg/L 2,3,7,8-TCDD TE.

In its water quality-based effluent limitation memo of April 8, 2002, the Department derived monthly average effluent limitations of 0.069 pg/L for 2,3,7,8-TCDD and 0.64 pg/L for 2,3,7,8-TCDD TE. The former limit is based on the wildlife water quality criterion of 0.003 pg/L and the entire 90-day Q_{10} river flow of 377 cfs (as estimated by taking 85 percent of the 7-day Q_2). The toxicity equivalence limit is based on the human cancer criterion of 0.014 pg/L and the entire harmonic mean river flow of 752 cfs.

Based on the above information, water quality-based effluent limitations for 2,3,7,8-TCDD and 2,3,7,8-TCDD TE would appear to be necessary pursuant to s. NR 106.05 (6), Wis. Adm. Code. That is, discharge data exceed limits of detection and exceed one-fifth of the monthly average limits for 2,3,7,8-TCDD and 2,3,7,8-TCDD TE.

Effluent limitations for 2,3,7,8-TCDD and 2,3,7,8-TCDD TE are not included in the proposed permit, however. For the following reasons, the first effluent sample is suspected of not representing Rhinelander Paper's discharge from Outfall 011:

- Only one of the nine dioxin and furan congeners that were detected in the first effluent sample was detected in a sample of sludge from Rhinelander Paper's wastewater treatment system. (Rhinelander Paper collected the sludge sample on June 20, 2001.) Neither 2,3,7,8-TCDD nor 2,3,7,8-TCDF were detected in the sludge.

Because dioxin and furan congeners are usually associated with solids, it is possible that they may be detected in a mill's sludge but not in its effluent. It is unlikely, however, that a congener would be detected in a mill's effluent, but not in its sludge.

The presence of the dioxin congener that is common to both the first effluent sample and the sludge sample does not warrant effluent limitations even at the concentration found in the first effluent sample. (The resulting 2,3,7,8-TCDD TE concentration would be 0.00028 pg/L.)

- The dioxin and furan congeners that were detected in the first effluent sample are not characteristic of those found in effluents and wastewater treatment system sludges of other Wisconsin pulp and paper mills. For example, it is unusual for 2,3,7,8-TCDD and 2,3,7,8-TCDF to be present in a mill's effluent or sludge without significant concentrations of octachlorodibenzo-*p*-dioxin (OCDD) and octachlorodibenzofuran (OCDF) also being present. No OCDF was detected in Rhinelander Paper's first effluent sample and only a small amount of OCDD was detected.
- Rhinelander Paper does not bleach pulp, which can be a significant source of dioxins and furans. Further, Rhinelander Paper purchases only those pulps that have not been bleached with elemental chlorine and are vendor certified to be less than 1 ppt of dioxin.

Rather than imposing water quality-based effluent limitations for 2,3,7,8-TCDD and 2,3,7,8-TCDD TE, the proposed permit requires further monitoring for 2,3,7,8-substituted dioxins and furans. Quarterly monitoring is proposed for the discharge from Outfall 011, and twice annual monitoring is proposed for wastewater treatment

system sludge for the first year of the permit's term. Annual monitoring of both effluent and sludge is proposed for the remaining term of the permit. The proposed permit also contains a provision that allows these monitoring requirements to be reduced further or completely eliminated after the first year of monitoring without public notice of permit modification. If the proposed monitoring provides results similar to that of the June 1, 2002 effluent sample and the June 20, 2001 sludge sample, the Department will most likely eliminate the monitoring requirements after the first year of the permit's term.

The Department encourages Rhinelander Paper to collect and analyze river water (intake) samples for dioxins and furans at the same time that it is monitoring its discharge from Outfall 011. While only a few mills have provided intake monitoring results, all those that have performed the monitoring have found dioxins and furans in their intake water. Further, the intake monitoring has shown that while dioxins and furans may be present in the discharge from the mill, no net discharge occurred.

The proposed permit specifies EPA Method 1613B, or any other method that is approved by EPA for wastewater and provides a minimum level of 10 pg/L or less for TCDD, as the test method for TCDD, TCDF and their congeners. At this time, however, Method 1613 is the only approved test method for wastewater.

Title Page

Name Change

The proposed permit changes the permittee's name from "Rhinelander Paper Company" to "Wausau-Mosinee Paper Corporation, Rhinelander Paper Company, Inc." Wausau-Mosinee Paper Corporation is identified as the responsible party (i.e., parent company or organization with direct control over the facility) in Rhinelander Paper's application for permit reissuance. Rhinelander Paper, as well as Mosinee Paper and Wausau Paper, are subsidiaries of Wausau-Mosinee Paper Corporation. For consistency, the permits for these three facilities will identify the permittee as Wausau-Mosinee Paper Corporation, Rhinelander Paper Company, Inc., Mosinee Mill and Brokaw Mill, respectively.

Proposed Expiration Date

The Department anticipates an effective date of October 1, 2003 for the proposed permit. Therefore, to allow a full permit term of five years, the proposed permit's expiration date is September 30, 2008. If the permit reissuance is delayed and an effective date of October 1, 2003 is not possible, the Department will change the permit's effective and expiration dates to allow a full five-year permit term. SWAMP operates more efficiently when the effective date of a permit is the first day of a calendar quarter.

The following sections of the fact sheet are numbered consistently with the numbering of corresponding conditions in the proposed permit. Shaded cells in the following tables of monitoring requirements and effluent limitations indicate permit conditions that are not found in the current permit.

1 In-plant Requirements

1.1 Sampling Points

Sampling Point No.	Sampling Point Location, Waste Type/Sample Contents and Treatment Description
104	At Sampling Point 104, primary clarifier effluent shall be monitored before it combines with secondary clarifier effluent. Sampling Point 104 is located at the sample tap on the primary WWTP effluent pipe approximately 10 feet downstream from the drop box following the primary clarifier effluent weirs.

Sampling Point No.	Sampling Point Location, Waste Type/Sample Contents and Treatment Description
105	At Sampling Point 105, secondary clarifier effluents shall be monitored after they mix, but before they combine with primary clarifier effluent. Sampling Point 105 is located at the sample tap on the secondary WWTP effluent pipe approximately 40 feet downstream from the drop box for combined secondary clarifier effluents.

Changes from Previous Permit:

The proposed permit initiates the use of Sampling Points 104 and 105. (Sampling point numbers 101, 102 and 103 have been used in previous permits and/or discharge monitoring reports for other purposes and will not be reused in the proposed permit reissuance.) By identifying these sampling points, the proposed permit recognizes that Rhinelander Paper monitors the discharge from its wastewater treatment plant at three locations. Rhinelander Paper uses a magnetic flow meter to monitor primary clarifier effluent flow, a second magnetic flow meter to monitor the combined flows from the two secondary clarifiers, and a composite sampler to monitor the primary and secondary clarifier effluents after they mix. A flow-proportional signal is supplied to the composite sampler from both the primary and secondary flow meters. The proposed permit identifies the primary clarifier flow meter as Sampling Point 104, the flow meter for the secondary clarifiers as Sampling Point 105 and the location of the composite sampler as Sampling Point 011.

The proposed permit does not require Rhinelander Paper to report flow-monitoring data for Sampling Points 104 and 105. It does, however, require Rhinelander Paper to report the sum of the flows as the flow rate at Sampling Point 011.

2 Surface Water Requirements

2.1 Sampling Points

Sampling Point No.	Sampling Point Location, Waste Type/Sample Contents and Treatment Description
004	At Sampling Point 004, cooling water shall be monitored after it combines with storm water, but before its discharges to the Wisconsin River via Outfall 004. Sampling Point 004 is located approximately 200 feet upgradient from the mouth of Outfall 004, which is located on the westerly bank of the Wisconsin River immediately below the hydro plant.
011	At Sampling Point 011, primary and secondary clarifier effluents shall be monitored after mixing, but prior to discharge to the Wisconsin River via Outfall 011. Sampling Point 011 is a tap located immediately upstream of diffuser (sparger) valve #1 on the combined effluent pipe.
012	At Sampling Point 012, overflow from the primary collection tank shall be monitored before it discharges to the Wisconsin River via Outfall 012. Sampling Point 012 is a combination sample point at which flow monitoring and discharge sampling during scheduled bypasses are performed at the primary collection tank overflow channel and discharge sampling during unscheduled bypasses is performed at the influent composite sampler for the primary clarifier.
016	At Sampling Point 016, drainage from the river water inlet clarifier shall be monitored before it discharges to the Wisconsin River via Outfall 016. Sampling Point 016 is located at the discharge point of Outfall 016, which is located on the easterly bank of the Wisconsin River immediately west of the inlet clarifier.

Sampling Point No.	Sampling Point Location, Waste Type/Sample Contents and Treatment Description
021	At Sampling Point 021, drainage from the inlet clarifier pump station wetwell shall be monitored before it discharges to the Wisconsin River via Outfall 021. Sampling Point 021 is located at the discharge point of Outfall 021, which is located on the easterly bank of the Wisconsin River immediately west of the inlet clarifier pump station wetwell.
018	Sampling Point 018 represents the combined discharge from Outfalls 011, 004, 012, 016 and 021.
010	At Sampling Point 010, condenser cooling water shall be monitored before it discharges to the Wisconsin River via Outfall 010. Sampling Point 010 is a combination sample point of which flow is monitored at the pumphouse and temperature is monitored at the discharge point of Outfall 010, which is located on the westerly side of the head race canal in the vicinity of the filter plant.
022	Sampling Point 022 represents the discharge of fire pump test water via Outfall 022.

Changes from Previous Permit

Sampling Point 018: Rhinelander Paper's current permit identifies the point of limits application for the sum of discharges from Outfalls 004, 011, 012 and 016 as Sampling Point 098. To appease SWAMP, however, the proposed permit changes the sampling point number to 018. The use of Sampling Point 018 is consistent with Rhinelander Paper's current monthly discharge monitoring reports (DMRs). In the proposed permit, however, Sampling Point 018 represents the combined discharge from Outfalls 004, 011, 012, 016 and 021. (The addition of Sampling Point 021 is explained below.) This is consistent with the definition of process wastewaters in EPA's Cluster Rules (40 CFR 430.01 (m)), which captures boiler blowdown, wastewaters from water treatment and other utility operations, wastewater including leachates for landfills owned by the mill if the wastewaters are commingled with wastewater from the mill's manufacturing facility, and storm waters from immediate process areas to the extent they are mixed and co-treated with other process wastewaters.

Sampling Point 021: The proposed permit acknowledges an existing discharge from Rhinelander Paper's river water clarifier inlet structure. This discharge occurs once a year during the mill's summer shutdown. During the shutdown, Rhinelander Paper drains both the fresh water clarifier and its inlet structure to allow inspections and maintenance. The clarifier and the inlet structure discharge via separate outfalls. Both the current permit and the proposed permit require monitoring of the clarifier drainage at Sampling Point 016. The proposed permit requires monitoring of inlet structure drainage at Sampling Point 021.

Sampling Point 022: Once each year, Rhinelander Paper tests its four fire protection pumps. These pumps are permanently installed and dedicated for fire protection. Test water is withdrawn directly from the Wisconsin River and returned directly to the River. One pump has the ability to be switched to city water. There are no cross-connections or alternative uses for the system. The test water does not receive any treatment, is not used for cooling and does not undergo any modification.

Since the discharge from the fire protection pumps does not appear to contain any pollutants, the proposed permit recognizes the discharge, but imposes no monitoring requirements or effluent limitations.

2.2 Monitoring Requirements and Effluent Limitations

2.2.1 Sampling Point 004 – Contact Cooling Water

Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type
Flow Rate		MGD	Daily	Continuous
BOD ₅ , Total		lbs/day	Daily - May through Oct. Five Times per Week – Nov. through April	24-hr, Flow-proportional Composite
Suspended Solids, Total		lbs/day	Five Times per Week	24-hr, Flow-proportional Composite
pH	Daily Minimum Daily Maximum	5.0 s.u. 9.0 s.u.	Daily	Grab
Temperature	Daily Maximum	120 °F	Daily	Grab
Phosphorus, Total		mg/L	Weekly	24-hr, Flow-proportional Composite
Chlorine, Total Residual	Daily Maximum Daily Maximum	38 µg/L 0.51 lbs/day Effective 7/1/06	Monthly	Grab Calculated

Changes from Previous Permit

Flow-proportional Composite Sampling: Rhinelander Paper’s current permit specifies a sample type of “24-hour composite” for BOD₅, TSS and phosphorus. The proposed permit specifies a “24-hour, flow-proportional composite” for these parameters. This does not represent a change in sampling requirements. Pursuant to s. NR 218.04 (12), Wis. Adm. Code, “‘24-hour composite sample’ means a combination of individual samples taken at intervals of not more than one hour such that the volumes of each of the individuals samples and of the combination are proportional to the volumes of flow during each interval and during the 24-hour period, respectively.” Therefore, by specifying “24-hour, flow-proportional composite,” the proposed permit clarifies a current requirement.

BOD₅ and TSS Sample Frequency: The proposed permit reduces the monitoring frequency for BOD₅, TSS and phosphorus due to the excellent quality of Rhinelander Paper’s effluent. See Attachment II, page 30 for more information.

pH Monitoring Frequency: The proposed permit reduces the pH monitoring frequency from twice daily to daily. Due to the apparent lack of variability in daily pH results, which represent readings taken five hours apart, a second pH reading each day is unnecessary. For example, the difference between daily pH readings exceeded 0.5 standard units only four times during the years 2001 and 2002. Over the entire 730-day period the difference between daily readings was never greater than 1 standard unit.

Total Residual Chlorine Effluent Limits: In its application for permit reissuance, Rhinelander Paper reported total residual chlorine in the discharge from Outfall 004 in excess of 38 µg/L, the proposed daily maximum water quality-based effluent limitation (WQBEL). Follow-up monitoring in August, September and October of 2002 confirmed total residual chlorine concentrations greater than 38 µg/L in the discharge from Outfall 004. Rhinelander Paper’s practice of disinfecting its intake water with chlorine and the use of the treated intake water as cooling water is the likely source of chlorine in the discharge from Outfall 004. Therefore, the proposed permit imposes WQBELs for total residual chlorine of 38 µg/L and 0.51 lbs/day daily maximum. The mass limit is based on a maximum discharge of 1.6 MGD, as predicted by Rhinelander Paper following efforts to reduce the amount of cooling water being discharged from Outfall 004.

Since Rhinelander Paper cannot immediately comply with the total residual chlorine WQBELs, the limits do not become effective until three years after the effective date of the proposed permit. See “Compliance Schedules,” page 22 for more information.

Additives: In addition to chlorine, Rhinelander Paper uses alum and polymers to treat its intake water. Based on the usage information contained in Rhinelander Paper’s application for permit reissuance, WQBELs are not necessary for these additives. Should Rhinelander Paper wish to change additives or increase usage rates above those indicated in the reissuance application, it must first receive Department approval (see “Additives,” page 23).

Permit Modification: The proposed permit contains a provision to change permit conditions for Sampling Point 004 should Rhinelander Paper permanently diverts all process wastewaters from the discharge. See “Alternate Permit Conditions for Sampling Point 004,” page 23 for more information.

Explanation of Limits

pH Limits: Proposed pH limits are the same as current limits. Due to the presence of process wastewaters in this discharge of mostly noncontact cooling water and storm water, pH limits from s. NR 284.12 (1), Wis. Adm. Code, are imposed. The limits of 5 standard units (s.u.) minimum and 9 s.u. maximum represent best practicable technology currently available.

Temperature Limit: The temperature limit of 120 degrees Fahrenheit (°F) represents best professional judgment. The limit remains unchanged since Rhinelander Paper has successfully met the limit.

Total Residual Chlorine Limit: As explained above, the proposed limits for total residual chlorine are water quality based. See the Department’s water quality-based effluent limitations memo of April 8, 2002 for more information.

2.2.2 Sampling Point 011 – Combined Primary and Secondary Clarifier Effluents

Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type
Flow Rate		MGD	Daily	Calculated
BOD ₅ , Total		lbs/day	Daily – May through Oct. Five Times per Week – Nov. through April	24-hr, Flow-proportional Composite
Suspended Solids, Total		lbs/day	Five Times Weekly	24-hr, Flow-proportional Composite
pH	Daily Minimum Daily Maximum	5.0 s.u. 9.0 s.u.	Daily	Continuous
Temperature		°F	Daily	Grab
Phosphorus, Total		mg/L	Weekly	24-hr, Flow-proportional Composite
Chlorine, Total Residual		µg/L	Daily when chlorinating return activated sludge.	Grab
Dioxins and Furans		pg/L	Quarterly Beginning 1/1/04 and Ending 12/31/04 Annual Beginning 1/1/05	24-hr, Flow-proportional Composite
Mercury, Total Recoverable		ng/L	Monthly	Grab
Acute WET		rTU _a	Annual	24-hr, Flow-proportional Composite

Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type
Chronic WET		rTU _c	Annual	24-hr, Flow-proportional Composite

Changes from Previous Permit

Flow Sample Type: The proposed permit recognizes that Rhinelander Paper monitors wastewater treatment plant effluent flow rate at Sampling Points 104 (primary clarifier effluent) and 105 (secondary clarifier effluent), but not at Sampling Point 011 (combined primary and secondary effluents). Therefore the proposed permit specifies continuous flow monitoring at Sampling Points 104 and 105, and allows the sum of these two flows to be reported as the flow at Sampling Point 011.

BOD₅, TSS and Phosphorus Monitoring Frequency: The proposed permit reduces the monitoring frequency for BOD₅, TSS and phosphorus due to the excellent quality of Rhinelander Paper's effluent. See Attachment II, page 30 for more information.

To allow an accurate determination of compliance with mass effluent limitations for BOD₅ and TSS, the proposed permit requires BOD₅ and TSS monitoring at Sampling Point 011 each day that discharge occurs at either Outfall 016 or 021, and on each day that a scheduled overflow occurs at Sampling Point 012. This monitoring will allow the total discharge from Sampling Points 011, 012, 016 and 021 to be compared to BOD₅ and TSS effluent limits when determining compliance. Due to the small quantities of BOD₅ and TSS in the discharge from Outfall 004, the coordination of BOD₅ and TSS monitoring is not extended to Sampling Point 004.

Rhinelander Paper may schedule BOD₅ and TSS monitoring at Sampling Point 011 to coincide with discharges at Outfall 012, 016 and 021. Thus, the frequency of BOD₅ monitoring during winter months and TSS monitoring during the entire year does not have to exceed five times per week at Sampling Point 011.

It is not necessary to monitor phosphorus on the same day at all sampling points. Unlike limits for BOD₅ and TSS, the phosphorus limit is expressed as a 12-month rolling average. The first step in calculating the 12-month rolling average discharge concentration is to calculate the monthly average phosphorus discharge concentration for each sampling point. Therefore, a discharge from Sampling Points 016, 021 and 012 does not necessitate phosphorus monitoring at Sampling Point 011. Further, Rhinelander Paper may choose to sample phosphorus at Sampling Point 004 on a different day than at Sampling Point 011.

Chlorine Monitoring: In the past, Rhinelander Paper has occasionally used sodium hypochlorite to control filamentous bacteria in its activated-sludge treatment system. Due to the potential discharge of chlorine in amounts that are toxic to aquatic organisms, the proposed permit requires chlorine monitoring when Rhinelander Paper chlorinates return activated sludge. A toxic level of chlorine would be any amount over 170 µg/L. (Normally, the daily maximum effluent limitation for total residual chlorine would be 38 µg/L. Due to Rhinelander Paper's zone of initial dilution, the limit would be 170 µg/L.)

Dioxins and Furans: As previously discussed (see "2,3,7,8-TCDD Permit Conditions," page 6), the proposed permit requires quarterly monitoring for the seventeen, 2,3,7,8-substituted congeners of dioxin and furan for the first year of the permit's term and annual monitoring for the permit's remaining term.

Mercury Monitoring: As previously discussed (see "Mercury Permit Conditions" page 5), the proposed permit requires mercury monitoring, including the use of a field blank, pursuant to Section NR 106.145, Wis. Adm. Code. The Department will provide a column on Rhinelander Paper's discharge monitoring report under Sampling Point 106, MERCURY FIELD BLANK FOR SP011, for reporting the results of field blank testing.

Whole Effluent Toxicity (WET) Monitoring: The proposed permit increases the acute and chronic WET monitoring frequency from three times during the permit's term to annual. The Department's *WET Guidance Document* (http://www.dnr.state.wi.us/org/water/wm/ww/biomon/_g_toc.htm) was used to establish this requirement. Basically, the guidance recommends annual acute and chronic WET testing for primary industries.

Department guidance suggests permits should require WET testing in rotating quarters. Therefore, the proposed permit requires acute and chronic WET testing during the first quarter of 2004, the second quarter of 2005, the third

quarter of 2006, and fourth quarter of 2007. The Department will consider a request for an alternate testing schedule.

Reporting WET test results under the proposed permit differs somewhat from current requirements. In addition to submitting the “Whole Effluent Toxicity Test Report Form” for each test, Rhinelander Paper must also report test results, in the form of reference acute toxicity units (rTU_a) and reference chronic toxicity units (rTU_c), on the quarterly Discharge Monitoring Reports (DMRs).

The proposed permit’s instream waste concentration (IWC) of 4.26 percent is less than the current permit’s at 5.28 percent. This difference is due to Rhinelander Paper’s efforts to reduce its effluent flow from Outfall 011. The mill has reduced its discharge from just over 10 MGD to 7.34 MGD for the first four months of 2003. Over the next 12 months, Rhinelander Paper expects to reduce its effluent flow to 5.5 MGD. The proposed IWC was calculated using an effluent flow of 8.31 MGD, the lowest 365-day average flow demonstrated by Rhinelander Paper to date. (The 365 daily flows reported by Rhinelander Paper over the period from May 1, 2002 through April 30, 2003 were used to calculate the average flow of 8.31 MGD.) Both current and proposed instream waste concentrations were calculated with the entire 7-day Q₁₀ of 304 cfs, minus 2 cfs for leakage around Rhinelander Paper’s hydroelectric plant.

Wastewater Treatment Additives: Rhinelander Paper utilizes polymers in its primary and secondary clarifiers (Polyfloc CP 1154 and Praestol 835 BS) and sludge presses (Polyfloc AP 1110 and Praestol 2540), and occasionally adds a defoamer (BASF SW-32) to the combined effluents. Rhinelander Paper has demonstrated that none of the polymers are present in the final effluent at levels that would be toxic to aquatic life. In addition, Rhinelander Paper has passed WET testing while these polymers were in use. The defoamer is used at concentrations much less than those that would be toxic to aquatic life. Therefore, no effluent limits are proposed for the polymers and defoamer. Should Rhinelander Paper wish to change additives or increase usage rates above those indicated in the application, it must first receive Department approval (see “Additives,” page 23).

Explanation of Limits

Continuous pH Monitoring: The technology-based effluent limits for pH of 5.0 s.u. minimum and 9.0 s.u. maximum have not changed (s. NR 284.12(1), Wis. Adm. Code). As with the current permit, the proposed permit allows brief excursions of the pH limits for a total of 446 minutes in one month, but no continuous excursion for more than sixty minutes and no excursion outside of the range of 4.0 to 11.0 s.u. Such excursions are allowed pursuant to s. NR 205.06, Wis. Adm. Code, when the permit specifies continuous pH monitoring.

2.2.3 Sampling Point 012 – Primary Collection Tank Emergency Overflow

Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type
Flow Rate		MGD	Daily When Discharging	Total Daily
BOD ₅ , Total		lbs/day	Daily When Discharging	Composite
Suspended Solids, Total		lbs/day	Daily When Discharging	Composite
pH	Daily Minimum Daily Maximum	5.0 s.u. 9.0 s.u.	Daily When Discharging	Grab
Temperature		°F	Daily When Discharging	Grab
Phosphorus, Total		mg/L	Daily When Discharging	Composite

Changes from Previous Permit

General Approach: Pursuant to paragraph (v) of s. NR 205.07 (1), Wis. Adm. Code, and to 40 CFR 122.41 (m)(4)(i), the proposed permit prohibits overflows of the primary collection tank unless:

- The overflow is unavoidable to prevent loss of life, personal injury, or severe property damage;

- There are no feasible alternatives to the overflow, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent an overflow which occurred during normal periods of equipment downtime or preventive maintenance; and
- Rhinelander Paper notifies the Department as required by Standard Requirement 5.2.2 for unscheduled overflows; or
- The overflow is scheduled for construction or normal maintenance and is authorized by the Department in writing or by e-mail as required by Standard Requirement 5.2.3.

Sample Frequency and Sample Type: While the proposed permit changes some wording, the intent of the required sample frequency remains unchanged. Changing the sample frequency from “Per Event” to daily when discharging leaves intact the requirement for daily monitoring during discharge.

A composite sample type still means a combination of individual samples of equal volume that are collected over the duration of the discharge at approximately equal intervals of time not to exceed one hour. During scheduled overflows, a time-proportional composite sample of the overflow may be used. During unscheduled overflows, a flow-proportional composite sampler of primary clarifier influent may be used. While the influent sampler is not actually sampling the discharge from Outfall 012, it is sampling flow that is representative of the primary collection tank’s contents, which are overflowing to Outfall 012 and being pumped to the primary clarifier.

Explanation of Limits

pH Limits: Proposed pH limits are the same as current limits. Due to the presence of process wastewaters in the primary collection tank overflow, pH limits from s. NR 284.12 (1), Wis. Adm. Code, are imposed. The pH limits represent best practicable technology currently available.

2.2.4 Sampling Point 016 – River Water Clarifier Drainage

Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type
Flow Rate		MGD	Daily When Discharging	Total Daily
BOD ₅ , Total		lbs/day	Daily When Discharging	Composite
Suspended Solids, Total		lbs/day	Daily When Discharging	Composite
pH	Daily Minimum Daily Maximum	5.0 s.u. 9.0 s.u.	Daily When Discharging	Grab
Phosphorus, Total		mg/L	Daily When Discharging	Composite

Changes from Previous Permit

General Approach: The proposed permit recognizes the draining of the inlet clarifier to be necessary for normal maintenance. Pursuant to paragraph (v) of s. NR 205.07 (1), Wis. Adm. Code, the proposed permit prohibits such discharges unless:

- The discharge is scheduled for construction or normal maintenance and is authorized by the Department in writing or by e-mail as required by Standard Requirement 5.2.3.

Sample Frequency and Sample Type: While the proposed permit changes some wording, the intent of the required sample frequency remains unchanged. Changing the sample frequency from “Per Event” to daily when discharging leaves intact the requirement for daily monitoring during discharge.

The composite sample type still means a combination of individual samples of equal volume that are collected over the duration of the discharge at approximately equal intervals of time not to exceed one hour.

Temperature Monitoring: Unlike the current permit, the proposed permit does not require temperature monitoring at Sampling Point 016. Since the inlet clarifier drainage is not a cooling water discharge (i.e., there is no source of heat), the proposed permit does not require temperature monitoring.

Explanation of Limits

pH Limits: Proposed pH limits are the same as current limits. The proposed permit recognizes inlet clarifier drainage as a process wastewater. Therefore, pH limits from s. NR 284.12 (1), Wis. Adm. Code, are imposed. The pH limits represent best practicable technology currently available.

2.2.5 Sampling Point 021 – River Water Inlet Wet Well Drainage

Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type
Flow Rate		MGD	Daily when Discharging	Estimated
BOD ₅ , Total		lbs/day	Daily When Discharging	Composite
Suspended Solids, Total		lbs/day	Daily When Discharging	Composite
pH	Daily Minimum Daily Maximum	5.0 s.u. 9.0 s.u.	Daily When Discharging	Grab
Phosphorus, Total		mg/L	Daily When Discharging	Composite

Changes from Previous Permit

General Approach: The proposed permit recognizes the draining of the inlet structure to be necessary for normal maintenance. Pursuant to paragraph (v) of s. NR 205.07 (1), Wis. Adm. Code, the proposed permit prohibits such discharges unless:

- The discharge is scheduled for construction or normal maintenance and is authorized by the Department in writing or by e-mail as required by the permit's Standard Requirement 5.2.3

Explanation of Limits

Due to the similar nature of the two discharges, proposed effluent limitations and monitoring requirements for Sampling Point 021 are the same as those for Sampling Point 016.

2.2.6 Sampling Point 018 – Outfalls 004, 011, 012, 016 and 021 Combined

Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type
Flow Rate		MGD	Daily	Calculated
BOD ₅ , Total	Monthly Average Daily Maximum	3,349 lbs/day 6,165 lbs/day and WLAs	Daily – May through Oct. Five Times per Week – Nov. through April	Calculated
Suspended Solids, Total	Monthly Average Daily Maximum	2,922 lbs/day 5,988 lbs/day	Five Times Weekly	Calculated
Phosphorus, Total	12-month Rolling Average	1.0 mg/L	Weekly	Calculated

Changes from Previous Permit

General Approach: Rhinelander Paper is not required to perform effluent sampling at Sampling Point 018 since a combined discharge of contact cooling water, treatment system effluent, emergency overflow, and inlet clarifier and inlet structure drainage does not actually exist. Rather, Rhinelander Paper shall determine compliance with effluent limits imposed at Sampling Point 018 by comparing the effluent limits to the sum of discharge loads from Sampling Points 004, 011, 012, 016 and 021.

BOD₅, TSS and Phosphorus Monitoring Frequency: The proposed sample frequencies for BOD₅, TSS and phosphorus at Sampling Point 018 reflect those proposed for Sampling Point 011.

To ensure an accurate demonstration of compliance, the proposed permit specifies that BOD₅ and TSS are to be reported for Sampling Point 018 only when sampling has occurred at Sampling Point 011. Thus, Rhinelander Paper is required to report the sum of BOD₅, and TSS discharges at a minimum of five times per week including when discharge from Outfalls 016 or 021 occurs and when a scheduled discharge from Outfall 012 occurs.

Reporting Waste Load Allocation Information: Rhinelander Paper's current discharge monitoring reports (DMRs) use Sampling Point 019 to identify columns for reporting waste load allocation data. The proposed permit and corresponding DMRs will continue this practice with the following changes. To comply with SWAMP's hierarchy for numbering sampling points, Sampling Point 601 will be used for river flow data, and Sampling Point 602 will be used for river temperature data. SWAMP specifies that numbers between 601 and 699 should be used to identify points where the receiving water is sampled. Since river flow is monitored at the Whirlpool Rapids Dam and river temperature is monitored at the Rhinelander Dam, the proposed permit identifies separate sampling points for the receiving water data.

At Rhinelander Paper's request, the proposed permit changes the location for monitoring river temperature from the Hat Rapids Dam to the Rhinelander Dam. Due to maintenance concerns at Hat Rapids Dam, the Rhinelander Dam site has become more workable. The condenser cooling water inlet temperature location at the Rhinelander Dam currently serves as the alternate temperature-monitoring site as specified in the current permit.

Explanation of Limits

BOD₅ and TSS Technology-based Effluent Limits: Technology-based effluent limits for BOD₅ and TSS remain unchanged. See Attachment IV, page 36, for the derivation of these limits.

BOD₅ Waste Load Allocation Limits: No changes are proposed for BOD₅ waste load allocated (WLA) effluent limitations. These limits have been in effect since the Rhinelander Paper permit was reissued on April 14, 1986. The limits were developed as part of a stipulated agreement between Rhinelander Paper, Citizens for a Better Environment, and the Department. The WLA limits reflect the change in effluent characteristics (i.e., ultimate BOD to BOD₅ ratios) following the shutdown of Rhinelander Paper's sulfite pulp mill in 1984. The WLA limits were derived from the values in Table 6-m of ch. NR 212, Wis. Adm. Code. The permit WLA tables can be reproduced by multiplying values in the Table 6-m by 1.5379 and replacing all resulting values that are greater than 6,165 lbs/day with 6,165 lbs/day, which is the daily maximum, technology-based effluent limitation.

2.2.7 Sampling Point 010 – Turbine Condenser Cooling Water

Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type
Flow Rate		MGD	Daily	Continuous
Temperature	Daily Maximum	100 °F	Daily	Grab

Changes from Previous Permit

No changes are proposed.

Explanation of Limits

Temperature Limit: The temperature limit of 100 degrees Fahrenheit represents best professional judgment. The limit remains unchanged since Rhinelander Paper continues to successfully meet the limit.

2.3 Storm Water Control Requirements

This section of the permit addresses the discharge of storm water from the Rhinelander Paper facility. It requires Rhinelander Paper to comply with all conditions of Subchapter II, ch. NR 216, Wis. Adm. Code, that are applicable to a **Tier I** industrial facility.

The proposed storm water requirements are intended to mirror those of the second issuance of the Tier I general permit. The conditions of the general permit are based on the assumption that the permittee has prepared a Storm Water Pollution Prevention Plan (SWPPP) for its facility and has performed at least two Annual Facility Site Compliance Inspections (AFSCI). Rhinelander Paper's current permit requires the mill to submit the first AFSCI report with chemical motoring results to the Department by June 12, 1998.

The current permit's storm water requirements are reproduced in the proposed permit with the following clarifications:

- Best management practices (BMPs), as identified in Rhinelander Paper's SWPPP, must be implemented.
- Non-storm water discharge inspections shall be performed during dry periods.
- Instances of dry weather flow, stains, sludge, color, or other indications of non-storm water discharge shall be recorded as part of the non-storm water discharge report.
- AFSCI, quarterly visual inspection, and non-storm water discharge reports must be maintained on site for Department inspection.
- No further chemical storm water monitoring is required.

3 Land Application Requirements

3.1 Sampling Point

Sampling Point No.	Sampling Point Location, Waste Type/Sample Contents and Treatment Description
017	Wastewater treatment plant sludge shall be monitored at Sampling Point 017 prior to the land application of the sludge. Sampling Point 017 located at a concrete pad at the primary treatment plant where dewatered sludge is stockpiled.

3.2 Monitoring Requirements and Limitations

3.2.1 Sampling Point 017 – Waste Water Treatment Plant Sludge

Parameter	Units	Sample Frequency	Sample Type
Solids, Total	Percent	Quarterly	Grab
Kjeldahl Nitrogen, Total	Percent as N DWB	Quarterly	Grab
Carbon, Total Organic	Percent DWB	Annual	Grab
Ammonia, Total	Percent as N DWB	Annual	Grab
Phosphorus, Total	Percent as P DWB	Once in 2007	Grab
Potassium, Total Recoverable	Percent DWB	Once in 2007	Grab
pH, Field	s.u.	Annual	Grab
Chloride	mg/kg DWB	Once in 2007	Grab

Parameter	Units	Sample Frequency	Sample Type
Aluminum, Total	mg/kg DWB	Once in 2007	Grab
Cadmium , Total	mg/kg DWB	Annual	Grab
Copper, Total	mg/kg DWB	Annual	Grab
Lead, Total	mg/kg DWB	Annual	Grab
Molybdenum, Total	mg/kg DWB	Once in 2007	Grab
Nickel, Total	mg/kg DWB	Annual	Grab
Zinc, Total	mg/kg DWB	Annual	Grab
Dioxins & Furans	ng/kg DWB	Twice per Year Ending 9/30/04 Annual Beginning 7/1/04	Grab
Priority Pollutants	mg/kg or µg/kg DWB	Once in 2007	Grab

Changes from Previous Permit

General Approach for Sludge Monitoring: Chapter NR 214, Wis. Adm. Code, allows the land application of industrial wastewater treatment plant sludge only if the sludge provides beneficial properties as a soil conditioner or fertilizer and does not adversely impact the soil, crops or groundwater. Further, the rule restricts the rate of sludge application based on the sludge's content of metals and plant nutrients.

The proposed permit requires monitoring for those parameters that may limit or restrict the land application of Rhinelander Paper's sludge. The most frequent monitoring is proposed for those parameters that have the greatest impact on the application rate of the sludge.

A summary of Rhinelander Paper's sludge monitoring data can be found in Attachment V, page 37.

Total Kjeldahl Nitrogen, Ammonia Nitrogen and Solids Monitoring: The maximum application rate of Rhinelander Paper's sludge is limited by its nitrogen content. Therefore, quarterly monitoring for Kjeldahl nitrogen is retained in the proposed permit.

Due to differences in availability of organic nitrogen and ammonia nitrogen to cover crops, the proposed permit requires ammonia monitoring in addition to monitoring for total Kjeldahl nitrogen. Because Rhinelander Paper's sludge contains only 0.014 percent ammonia nitrogen, as compared to 1.96 percent total Kjeldahl nitrogen, only annual monitoring is proposed.

The total Kjeldahl nitrogen data that Rhinelander Paper submitted during the term of the current permit indicate the sludge continues to provide beneficial properties as a fertilizer.

Sludge characteristics are normally expressed on a dry weight basis (DWB), which requires a determination of the sludge's solids content. Therefore, the proposed monitoring frequency for total solids remains the same as that for total Kjeldahl nitrogen.

Metals and pH Monitoring: Chapter NR 214 limits the application rate of cadmium and the cumulative loadings of cadmium, copper, lead, nickel and zinc. The rule also sets a pH limit for the sludge and soil mixture. Since the metals content of Rhinelander Paper's sludge is quite low, these limits are not likely to restrict the rate of sludge application. Nevertheless, occasional monitoring is appropriate. For example, ch. NR 204, Wis. Adm. Code, requires municipal wastewater treatment systems that produce as much sludge as Rhinelander Paper's wastewater treatment system to monitor metals in their sludge six times per year. Monitoring frequencies for other pulp and paper mills in Wisconsin range from annual to twice per month. Most mills must monitoring metals in their wastewater treatment system sludge twice per year. Therefore, the proposed permit maintains annual copper and zinc monitoring requirements and adds annual monitoring requirements for cadmium, lead, nickel and pH.

Total Organic Carbon: The proposed permit requires annual monitoring for total organic carbon. Values for total organic carbon and total Kjeldahl nitrogen are necessary to calculate the C:N ratio. The rate of mineralization of organic nitrogen to inorganic, plant-available nitrogen is dependent of the C:N ratio of the sludge.

Dioxins and Furans: The proposed permit requires monitoring for the seventeen, 2,3,7,8-substituted congeners of dioxin and furan twice during the first year of the permit's term and once every year for the permit's remaining term. See "2,3,7,8-TCDD Permit Conditions," page 6 for more information.

Reevaluation of Sludge Characteristics: The current permit required Rhinelander Paper to perform a priority pollutant scan on its wastewater treatment plant sludge. The results of the priority pollutant scan show Rhinelander Paper's sludge will not adversely impact the soil, crops or groundwater.

To allow a similar evaluation when the proposed permit is reissued in 2008, the permit requires one-time monitoring during 2007 for phosphorus, potassium, chloride, aluminum, molybdenum, and the priority pollutants as listed in s NR 215.03 (1) through (6), but excluding asbestos.

Annual monitoring for heptachlor as specified by Rhinelander Paper's current permit is not retained in the proposed permit. Review of submitted data indicates little likelihood that heptachlor will adversely impact the soil, crops or groundwater. Since heptachlor is a priority pollutant, data will be available for reevaluation when the proposed permit is reissued.

Sample Type: The current permit specifies two sample types for each sludge parameter, composite and grab. The permit does not explain what composite sampling means nor does it specify the circumstance under which each sample type should be used.

The proposed permit requires composite sampling, which the permit defines as a combination of one or more individual samples of equal volume taken at approximately equal intervals over a period of up to three days. This definition allows Rhinelander Paper the flexibility to collect one or more grab samples to provide a representative composite of the sludge that it generates.

3.3 Sludge Application Rate Limits

General Approach: The proposed permit limits the application rates of certain sludge constituents. Limits that are more or less specific to Rhinelander Paper are located in the proposed permit's land application section. Limits that are applicable to all industrial facilities that land apply sludge are found in the permit's standard requirements section. Some of the standard requirements are present in the proposed permit only as references to ch. NR 214, Wis. Adm. Code.

Nitrogen Limit: Pursuant to s. NR 214.18 (4)(d), Wis. Adm. Code, Both the current permit and the proposed permit limit the application rate of total nitrogen to the needs of the cover crop minus any other source of nitrogen including that available to plants from previous applications of sludge. The current permit further limits the maximum application rate of available nitrogen to 165 pounds per acre per year on agricultural sites. The proposed permit, however, updates the maximum application rate for agricultural sites to 200 pounds per acre per year, which equals the nitrogen demand for potatoes. Potatoes are a common cover crop on fields where Rhinelander Paper applies its sludge. Both permits allow a greater application rate of total nitrogen if Rhinelander Paper demonstrates via the management plan that more nitrogen can be applied and obtains written concurrence from the Department.

Because the nitrogen limit is tailored to Rhinelander Paper's land application program, the limit is located in the land application section of the proposed permit.

Rhineland Paper's current sludge management plan limits the application of sludge to 20 dry tons per acre. This application rate approximately equals 150 pounds of available nitrogen per acre, which complies with the proposed limit of 200 pounds per acre per year. This maximum application rate was calculated using the following assumptions:

- Rhinelander Paper's sludge contains 1.89 percent total Kjeldahl nitrogen and 0.014 percent ammonia nitrogen (DWB);

- The organic nitrogen mineralization rate of Rhinelander Papers sludge is 20 percent during the first growing season and 50 percent of the ammonia nitrogen is volatilized prior to incorporation;
- Only 20 tons of Rhinelander Paper's sludge was applied in one year and no sludge was applied during previous years; and
- There are no other sources of nitrogen such as fertilizer or manure applied during the same growing season.

Should the owner of the sludge application site apply more than 50 pounds per acre of available nitrogen in the form of a fertilizer or manure, Rhinelander Paper must apply less than 20 dry tons of sludge per acre.

Similarly, if Rhinelander Paper's sludge is applied to the same site for two or more consecutive years, application rates after the first year may have to be reduced. For example, if 20 dry tons of sludge is applied per acre the first year, less than 20 dry tons per acre may be applied the following year if more than 50 pounds of nitrogen is available from the previously applied sludge. That is, if the amount of nitrogen available from the first application of sludge exceeds 6.6 percent of the total nitrogen initially applied, the amount of sludge applied the second year must be less than 20 tons per acre.

Cadmium Limit: Both the current permit and the proposed permit impose a loading limit of 0.45 pounds of cadmium per acre per year. This limit is applicable to spreading sites that are used for the production of food chain crops (s. NR 214.18 (4)(f)). Chapter NR 214 defines "food-chain crop" as a crop grown for human consumption, including tobacco, and as pasture, forage and feed grains for animals whose products are consumed by humans. Since this limit is applicable to all industrial permittees that land apply sludge, it is referenced in the standard requirements section of the proposed permit.

At a sludge content of <0.48 mg/kg (DWB), the cadmium loading limit restricts Rhinelander Paper to applying a maximum of 470 tons per acre (DWB). As long as Rhinelander Paper complies with the more restrictive nitrogen loading limit, compliance with the cadmium limit should not be a problem.

Cumulative Metals Loading Limits: Maximum cumulative loading limits for cadmium, copper, lead, nickel and zinc remain unchanged and continue to be referenced in the standard requirements section of the permit. The loading limits are reproduced below.

Maximum Cumulative Metals Loading for a Land Application Site (pounds per acre)				
Metal	Soil Cation Exchange Capacity (meq/100g)			
	Less than 5	5 to 10	10 to 15	Greater than 15
Cadmium				
Soil pH < 6.5	4.5	4.5	4.5	4.5
Soil pH ≤ 6.5	4.5	9.0	13.5	18
Copper	110	220	335	445
Lead	445	890	1335	1750
Nickel	45	90	135	180
Zinc	225	445	670	890

At an average application rate of 20 tons of sludge per acre per year, Rhinelander Paper's current sludge application sites will reach maximum cumulative loads in greater than 240 years for cadmium, 100 years for copper, greater than 1,000 years for lead, 190 years for nickel and 160 years for zinc. (See Table 6 of Attachment V, page 40 for more information.

Limits for Total Dioxin Equivalents (TDE): Since neither 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (2,3,7,8-TCDD) nor 2,3,7,8-tetrachlorodibenzofuran were detected in Rhinelander Paper's sludge, the proposed permit does not impose application rate limits for 2,3,7,8-TCDD toxicity equivalents.

pH Limit: Both the current permit and the proposed permit restrict the pH of the sludge and soil mixture to 6.5 s.u. or greater at the time that the sludge is applied. However, if there is less than 2 milligrams of cadmium per kilogram of sludge (DWB), the soil pH may be less than 6.5. (s. NR 214.18 (4)(e)). Since this limit is applicable to all industrial permittees that land apply sludge, the pH limit is referenced in the standard requirement section of the proposed permit.

Since the cadmium concentration of Rhinelander Paper's sludge is less than 2 mg/kg, compliance with the pH limit does not appear to be a problem.

3.4 Land Application Activity Reporting Requirements

Daily Log: Similar to the current permit, the proposed permit reissuance requires Rhinelander Paper to maintain a daily log of the amount of sludge landspread, the identification numbers of the landspreading sites used, and the number of acres on which sludge was spread. While Rhinelander Paper does not have to submit a copy of the daily log, it must make the daily log available for inspection upon request by the Department.

Other Reporting Requirements: Similar to the current permit, the proposed permit reissuance requires Rhinelander Paper to submit the following forms:

- Rhinelander Paper must provide general information on sludge generation, storage, treatment, transportation and disposal on "General Sludge Management Information, Form 3400-48." Rhinelander Paper must submit this form prior to making any significant changes to its sludge management program and as part of its permit reissuance applications. (Note that the "Land Application Discharge, Wastewater Sources and Treatment Technologies" section of the Department's current permit reissuance application may be used as a substitute for Form 3400-48.)
- Rhinelander Paper must use the "Characteristic Report, Form 3400-49" to report the results of permit-required sludge monitoring. Form 3400-49 must be submitted **by January 31st annually**.
- **By January 31st annually**, Rhinelander must submit "Other Methods of Disposal or Distribution Report, Form 3400-52" to identify all methods other than land application that it used to dispose Wastewater reclamation Center sludge. Examples of alternative disposal methods include landfilling, incineration and transportation to another facility for further treatment or disposal.
- **By January 31st annually**, Rhinelander Paper must report sludge loadings on all land application sites that it utilized during the year. "Annual Land Application Report, Form 3400-55" must be used.

OTHER LAND APPLICATION REQUIREMENTS

Sludge Management Plan: Rhinelander Paper must operate its land application program in a manner consistent with a Department-approved sludge management plan. The current sludge management plan is dated July 24, 1995 with an addendum dated December 9, 1997. Rhinelander Paper should review the plan and, if necessary, update it and resubmit it for approval. If Rhinelander Paper intends to land apply its sludge on the same field in consecutive years, the updated plan must include information on the mineralization of organic nitrogen following the first growing season.

Land Application Site Approval: Rhinelander Paper is authorized to land apply wastewater treatment plant sludge only on sites that are approved in writing by the Department. Rhinelander Paper must submit "Land Application Site Evaluation, Form 3400-53" to request the Department's approval for a new site.

Nitrogen Sources Other than Rhinelander Paper Sludge: It is not the Department's intent to require Rhinelander Paper to regulate the total amount of nitrogen applied by the farmer who owns or operates the agricultural site upon which its sludge is applied. However, the Department does expect Rhinelander Paper to consult with the farmer and provide only enough sludge to supply the nitrogen needs of the cover crop minus the amount of nitrogen that the

farmer indicates will be applied in forms other than sludge. Therefore, the following language is included in the proposed permit

Nitrogen applied may be based on information provided by the landowner or operator with respect to alternate sources of nitrogen.

4 Compliance Schedules

4.1 Compliance Schedule for Total Residual Chlorine at Sampling Point 004

As discussed previously, the proposed permit imposes water quality-based effluent limitations for total residual chlorine at Sampling Point 004 (contact cooling water). Since Rhinelander Paper can not immediately comply with the total residual chlorine WQBELs, the proposed permit contains a compliance schedule for the limits. The proposed compliance schedule requires Rhinelander Paper to prepare an action plan by September 30, 2004 for meeting the chlorine effluent limitations, initiate actions identified in the plan by September 30, 2005, and complete all action necessary to meet the chlorine effluent limitations by September 30, 2006. The chlorine effluent limitations become effective October 1, 2006.

The proposed permit contains a provision to eliminate the compliance schedule should Rhinelander Paper either eliminates all process wastewaters, including noncontact cooling waters, or eliminates all process wastewaters except noncontact cooling waters and qualifies for an exemption from the chlorine limit pursuant to s. NR 106.10, Wis. Adm. Code. See "Alternate Permit Conditions for Sampling Point 004," page 23 for more information.

4.2 Mercury Pollutant Minimization Program

As discussed previously (see "Mercury Conditions," page 5), after the first 24 months of mercury monitoring, Rhinelander Paper must develop and implement a pollutant minimization program (PMP). The proposed permit's compliance schedule for the mercury PMP requires the following actions:

- **By September 30, 2006**, Rhinelander Paper shall develop a PMP plan for mercury;
- **By April 1, 2007**, Rhinelander Paper shall begin implementing the mercury PMP plan;
- **By September 30, 2007**, Rhinelander Paper shall submit the first annual report on its progress implementing the mercury PMP plan; and
- **By September 30, 2008**, Rhinelander Paper shall submit the second annual report on its progress implementing the mercury PMP plan.

The proposed permit allows the Department to deactivate the PMP compliance schedule without further public notice should Rhinelander Paper demonstrate that there is no reasonable potential for mercury limits being exceeded. See "Mercury Monitoring and Pollutant Minimization Program" page 5 for additional information.

5 Standard Requirements

For the most part, the standard requirements in both the current permit and the proposed permit are taken from ch. NR 205, Wis. Adm. Code. Some of these standard requirements differ somewhat between the two permits to reflect changes that have been made to ch. NR 205 since the issuance of the current permit. (Chapter NR 205, as well as other chapters of the Wisconsin Administrative Code, can be found at <http://www.legis.state.wi.us/rsb/code/nr/nr200.html>.) In particular, Rhinelander Paper should take note of the changes made to the standard requirements that address bypassing.

In the past, Rhinelander Paper has requested a few additions to the standard requirements. The proposed permit continues these additions as they appear in the current permit. These additions include.

- Upset: The upset standard requirement allows the occurrence of an upset to be used as an affirmative defense to actions brought for noncompliance with technology-based effluent limitations. The language of the special condition was taken directly from s. 122.41 (n), Title 40, Code of Federal Regulations.
- Duty to Halt or Reduce Activity Addendum: This addendum allows Rhinelander Paper to continue production upon the failure or impairment of its wastewater treatment plant if system operations are restored or an alternate method of treatment is provided within a short time and if curtailing production would likely result in the upset of the secondary biological wastewater treatment plant. That is, a short period of noncompliance is preferable to a longer period that could result if the treatment system is upset during a mill shut down.
- Additives: The standard requirement for additives has been changed to specifically address cooling water treatment additives and wastewater treatment additives that are used downstream from the activated sludge aeration tanks. Inlet clarifier additives are covered by the standard requirement since they are present in Rhinelander Paper's cooling water discharge. Primary clarifier additives are covered because effluent from the primary clarifier receives no further treatment. Defomer is covered since it is added at the primary clarifier discharge. Sludge press additives are covered because pressate is returned to the primary clarifier. Additives used in paper and yeast production are not covered by the standard requirement. Currently, Rhinelander Paper uses the following additives for these purposes:

<u>Additive</u>	<u>Additive Dosage</u>
Inlet Clarifier	
Alum	Target range of 0.3 to 0.4 ppm or pH range of 5.8 to 6.2.
Betz Dearborn, Novus CE 2672 (polymer to enhance solids settling)	0.4 mg/L
Betz Dearborn, Polymer 1175 (coagulant)	1 mg/L
Chorine.	Target free residual of 0.4 to 0.5 ppm.
Primary Clarifier	
Alum	Intermittent as needed for pH adjustment
Lime	Intermittent as needed for pH adjustment
Betz Dearborn, Polyfloc CP 1154 (cationic flocculant)	0.4 mg/L
Stockhausen, Praestol 835 BS (polymer to enhance solids settling)	0.4 mg/L
Defoamer, BASF SW-32,	Intermittent as needed.
Secondary Clarifier	
Betz Dearborn, Polyfloc CP 1154 (polymer to enhance solids settling)	7 mg/L
Betz Dearborn, Praestol 835 BS (polymer to enhance solids settling)	7 mg/L
Sludge Press	
Betz Dearborn, Polyfloc AP 1110 (anionic flocculant)	13 mg/L
Stockhausen, Praestol 2540 (polymer to enhance solids settling)	13 mg/L

Other Comments:

Alternate Permit Conditions for Sampling Point 004: During the term of the proposed permit, Rhinelander Paper intends to modify its discharge from Outfall 004 by eliminating most if not all process wastewaters. As part of this

effort, Rhinelander Paper undertook a trial in April 2003 when all noncontact cooling waters were recycled and all other process wastewaters were diverted to treatment. During the trial, only stormwater was discharged via Outfall 004.

If Rhinelander Paper were successful in permanently eliminating all process wastewaters except noncontact cooling water, the following permit conditions would be appropriate for Sampling Point 004.

Sampling Point 004 – Noncontact Cooling Water

Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type
Flow Rate		MGD	Weekly	Total Daily
BOD ₅ , Total		lbs/day	Monthly	Grab
Suspended Solids, Total		lbs/day	Monthly	Grab
Temperature	Daily Maximum	120 °F	Weekly	Grab
Chlorine, Total Residual		µg/L	Quarterly	Grab

BOD₅ and TSS monitoring would be retained as a check for possible contamination. Concurrent monitoring of BOD₅ and TSS with monitoring at Sampling Point 011 would not be necessary. Phosphorus and pH monitoring would be eliminated. Phosphorus monitoring is not normally specified for a noncontact cooling water discharge unless a water treatment additive containing phosphorus is used. Chlorine effluent limits and the compliance schedule for the limits would be eliminated assuming Rhinelander Paper qualifies for the water treatment additive exemption pursuant to s. NR 106.10, Wis. Adm. Code. That is, Rhinelander Paper must demonstrate that its rate of chlorine use is similar to that typically used to provide a public drinking water supply.

If Rhinelander Paper eliminates all process wastewaters including noncontact cooling waters from the Outfall 004 discharge, no monitoring requirements or effluent limitations would be necessary at Sampling Point 004 other than control requirements for storm water.

To more efficiently accommodate permit modification should Rhinelander Paper change the Outfall 004 discharge during the proposed permit's term, the permit contains language allowing permit modification without public notice. If Rhinelander Paper removes all process waters except noncontact cooling water from the discharge, the proposed permit language specifies that that monitoring identified in the above table will be imposed via permit modification. The proposed chlorine limit and its compliance schedule would remain in the permit unless Rhinelander Paper obtains an exemption from the limit pursuant to s. NR 106.10, Wis. Adm. Code. If Rhinelander Paper removes all process wastewaters for the discharge, the proposed permit language specifies the elimination of all monitoring requirements and effluent limitations excluding storm water control requirements, via permit modification.

Alternate Technology-based Effluent Limitations for Sampling Point 018: Rhinelander Paper's current production rates exceed those upon which current technology-based effluent limits are based. Further, current limits do not reflect credit for the production of torula yeast by the Lakes States Division. While Rhinelander Paper is entitled to effluent limits that are based on its current production, Wisconsin's water quality antidegradation requirements must be met before BOD₅ and TSS effluent limits may be increased. Specifically, Rhinelander Paper must demonstrate that current limits are too restrictive and have resulted or will result in exceedances of current limits before antidegradation requirements will allow increased limits.

For planning purposes, Rhinelander Paper asked the Department to recalculate technology-based effluent limitations based on current production. The Department is willing to undertake this excise if Rhinelander Paper provides the following information:

- Verify that the production of 493 TPD, as reported in the application for permit reissuance, represents annual off-the-machine production, including off-the-machine coating where applicable, divided by the number of operating (calendar) days during the year. Paper production should be measured at the paper machine take-up reel in off-the-machine moisture content.
- Divide annual paper production into nonintegrated tissue and nonintegrated fine subcategories. Examples of tissue paper include facial and toilet papers, glassine, paper diapers and paper towels. Examples of fine paper include printing, business, writing and technical papers.
- Provide data on BOD₅ and TSS loadings to Rhinelander Paper's wastewater treatment system from torula yeast production at the Lakes States Division.
- Provide data on BOD₅ and TSS removal efficiencies at Rhinelander Paper's wastewater treatment system.

Total Residual Chlorine Limits at Sampling Point 011: In its application for permit reissuance, Rhinelander Paper reported total residual chlorine in the discharge from Outfall 011 (combined primary and secondary clarifier effluents). The maximum value reported and the 1-day P₉₉ of all thirteen reported values exceed the daily maximum water quality-based effluent limitation (250 µg/L and 321 µg/L vs. 170 µg/L). The 4-day P₉₉ of the reported results exceeds the weekly average water quality-based effluent limitation (188 µg/L vs. 140 µg/L). Therefore, the Department's water quality-based effluent limitations memo of April 8, 2002 recommends the imposition of daily maximum and weekly average water quality-based effluent limitations for total residual chlorine pursuant to s. NR 106.05 (3) and (4), Wis. Adm. Code.

Subsequent testing performed by Rhinelander Paper in August, September and October of 2002 produced the following results: a maximum value of 60 µg/L, a 1-day P₉₉ of 85 µg/L, and a 4-day P₉₉ of 57 µg/L. Based on these results, the first set of chlorine test results is rejected as being unrepresentative of the actual discharge. Consequently, water quality-based effluent limitations for total residual chlorine are not included in the proposed permit. The initial set of chlorine data was rejected for the following reasons:

- In preparation for the second round of chlorine testing, Rhinelander Paper prepared a matrix-specific calibration curve and method detection limit, thus improving the accuracy of the testing.
- As part of the second round of testing, Rhinelander Paper tested primary and secondary clarifier effluents. Total chlorine residual was detected only in secondary clarifier effluent. Further testing suggests that organic contaminants in the Lake States Yeast Plant effluent cause interference in the chlorine test and produce a false positive for chlorine residual in the secondary clarifier effluent. This permit drafter believes it is very unlikely that residual chlorine will pass through an activated-sludge treatment system unless Rhinelander Paper is chlorinating its return activated sludge.

ZID Discharge Restrictions: As discussed previously, Rhinelander Paper's diffuser system at Outfall 011 qualifies for a zone of initial dilution (ZID). To remain qualified for a ZID, Rhinelander Paper must maintain a discharge velocity of 10 feet per second (fps) or more for at least 98 percent of the time, excluding periods during mill shutdowns when there is no discharge.

Rhinelander Paper continues to maintain a discharge velocity of 10 fps or more. For example, during 2001 and 2002, the velocity of Rhinelander Paper's discharge equaled or exceeded 10 fps 99.18 percent of the time. The only time that the discharge velocity fell below 10 fps was during annual mill shutdowns.

Because Rhinelander Paper consistently maintains a discharge velocity in excess of 10 fps, the proposed permit does not require Rhinelander Paper to calculate and report discharge velocity.

Sludge Land Application pH Limit: Rhinelander Paper has requested an exemption from the 6.5 s.u. minimum pH limit for the mixture of sludge and soil following the land application of its wastewater treatment system sludge. Such an exemption is available pursuant to s. NR 214.06, Wis. Adm. Code. Should Rhinelander Paper supply the information required by s. NR 214.06 during the public notice period, the limit may be removed from the permit prior to issuance.

Organization of Discharge Monitoring Reports: SWAMP allows some freedom in ordering of sampling points within the surface water section of the permit and, more importantly, the discharge monitoring reports. If

Rhineland Paper has a preference for the order of columns on the DMRs, please comment. As currently programmed, SWAMP will produce monthly DMRs with columns in the following order:

- Sampling Point 004 – flow rate, BOD₅, TSS, pH, temperature, phosphorus; total residual chlorine (µg/l), and total residual chlorine (lbs/day);
- Sampling Point 011 – flow rate, BOD₅, TSS, pH (minimum), pH (maximum), pH total exceedance time, pH exceedance greater than 60 minutes, temperature, phosphorus, total residual chlorine, and mercury;
- Sampling Point 106 – mercury field blank;
- Sampling Point 012 – flow rate, BOD₅, TSS, pH, temperature, phosphorus;
- Sampling Point 016 – flow rate, BOD₅, TSS pH, temperature, and phosphorus;
- Sampling Point 021 – flow rate, BOD₅, TSS pH, temperature, and phosphorus;
- Sampling Point 018 – flow rate, BOD₅, TSS, phosphorus;
- Sampling Point 010 – flow rate and temperature;
- Sampling Point 601 (during summer months) – Wisconsin River flow;
- Sampling Point 602 (during summer months) – Wisconsin River temperature; and
- Sampling Point 019 (during summer months) – waste load allocation and BOD₅.

A quarterly DMR will be used for each of the four sets of acute and chronic whole effluent toxicity (WET) test results. Quarterly monitoring reports will be used for dioxin and furan monitoring results until 2005 when annual reports will be used.

Prepared By:

Mike Hammers
Wastewater Permits and Pretreatment Section

Date:

Attachment I

Surface Water Discharge Characteristics

Table 1. Process Wastewater Discharge Characteristics

Sampling Point	Wastewater Description	Parameter	Discharge Data ¹
004	Paper Mill Contact Cooling Water	Flow:	0.58 MGD Annual Average (n=51) 1.52 MGD Peak Day
		BOD ₅ :	<10 lbs/d Annual Average (n=51, 50 ND @ 2 mg/L) (<2.1 mg/L) 18 lbs/d Peak Day (4.3 mg/L)
		TSS:	<7.4 lbs/d Annual Average (n=51, 4 ND @ 1 mg/L) (<1.5 mg/L) 47 lbs/d Peak Day (9.2 mg/L)
		pH:	5.6 s.u. Minimum (n=365, 52 results < 6.0) ^a 8.4 s.u. Maximum (n=365) ^a
		Temperature:	74° F Winter Maximum (n=181) 99° F Summer Maximum (n=184)
		Phosphorus, Total:	<0.13 mg/L Annual Average (n=104, 20 ND @ 0.08 mg/L) 0.16 mg/L Peak Monthly Average 0.39 mg/L Peak Day
010	Once-through Condenser Cooling Water	Flow:	8.67 MGD Annual Average (n=365) 9.56 MGD Peak Monthly Average 11.64 MGD Peak Day
		Temperature:	52° F Winter Maximum (n=181) 84° F Summer Maximum (n=180)
011	Treated Effluent (combined primary and secondary)	Flow:	8.95 MGD Annual Average (n=365) 10.16 MGD Peak Monthly Average 11.62 MGD Peak Day
		BOD ₅ :	905 lbs/d Annual Average (n=364)(12.1 mg/L) 1,185 lbs/d Peak Monthly Average(14.6 mg/L) 2,013 lbs/d Peak Day (26.1 mg/L)
		TSS:	887 lbs/d Annual Average (n=364)(11.9 mg/L) 1,233 lbs/d Peak Monthly Average (15.0 mg/L) 2,540 lbs/d Peak Day (32.2 mg/L)
		pH:	5.5 s.u. Minimum (n=364) ^b 8.7 s.u. Maximum (n=364) ^b
		Temperature:	91° F Winter Maximum (n=181) 104° F Summer Maximum (n=183)
		Phosphorus, Total:	0.63 mg/L Annual Average (n=103) 1.63 mg/L Peak Monthly Average 2.30 mg/L Peak Day 1,400 lbs per Month on Average
012	Primary Collection Tank	Flow:	0.27 MGD Average (n=5) 0.65 MGD Peak Day

Attachment I, Surface Water Discharge Characteristics (continued)

Sampling Point	Wastewater Description	Parameter	Discharge Data ¹
	Emergency Overflow	BOD ₅ :	22.3 lbs/d Average (n=5)(9.8 mg/L) 41.5 lbs/d Peak Day (12.4 mg/L)
		TSS:	221 lbs/d Average (n=5)(97 mg/L) 617 lbs/d Peak Day (255 mg/L)
		pH:	6.1 s.u. Minimum (n=5) 7.1 s.u. Maximum
		Phosphorus, Total:	0.37 mg/L Annual Average (n=5) 0.54 mg/L Peak Day
		Temperature:	100° F Summer Maximum (n=5)
016	Intake Clarifier Under-drain	Flow:	3.83 MGD (n=1)
		BOD ₅ :	42 lbs/d (n=1)(1.31 mg/L)
		TSS:	263 lbs/d (n=1)(8.23 mg/L)
		pH:	6.5 s.u. Minimum (n=1?) 6.6 s.u. Maximum (n=1?)
		Phosphorus, Total:	0.15 mg/L (n=1)
		Temperature:	82° F Maximum (n=1)

¹ These discharge data were taken from Discharge Monitoring Reports submitted by the permittee for 2002, with the following exception. Discharge data for flow, BOD₅, and TSS at Sampling Point 004 are taken from the period of November 11 through December 31, 2002. Chronic problems with flow monitoring at Sampling Point 004 invalidate flow data and discharge values that are expressed as a mass (e.g., pounds per day) for the period prior to November 11th.

^a During 2002, Rhinelander Paper grabbed a pH sample twice a day at Sampling Point 004. The lesser value was reported as the daily minimum pH and the greater value was reported as the daily maximum.

^b During 2002, Rhinelander Paper continuously monitored pH at Sampling Point 011. The instantaneous maximum pH was reported as the daily maximum pH. The instantaneous minimum was reported as the daily minimum pH.

Table 2. Historical Use of Outfall 012 (primary collection tank emergency overflow).

Year	Date of Discharge	Description
1997	June 5 th	Mechanical failure; 8-minute discharge
	?	Heavy rains: one 18-minute and one 21 minute discharge
	June 23 rd through 25 th	Plant shutdown
	July 16 th	Operator error; 7-minute discharge
	August 4 th	Mechanical failure; 4-minute discharge
1998	May 20 th	Manual failure to react to high flow; 1.5-minute discharge
	June 9 th	Excess flow due to sewer test; 1-minute discharge
	June 21 st	Power failure; 5-minute discharge
	June 22 nd through 24 th	Plant shutdown
	June 25 th	Pump control failure; one 60-minute and one 26-minute discharge
	September 12 th	Excessive flow due to removal of sewer plug
1999	June 3 rd	Diversion line valve failure; 5-minute discharge
	June 5 th	Power failure due to storm; 22-minute discharge
	June 21 st through 23 rd	Plant shutdown
2000	July 24 th through 27 th	Plant shutdown
2001	February 24 th	Tripped breaker; 11-minute discharge
	May 16 th	Power failure
	June 25 th through 27 th	Plant shutdown
	August 10 th	Power failure; 20-minute discharge
	August 23 rd	Power failure; 23-minute discharge
	September 6 th	4-inch rainfall; 4-minute discharge
2002	April 18 th	3-inch rainfall; 2.5 minute discharge
	June 24 th through 26 th	Plant shutdown
	July 2 nd	Power surge; 11 minute discharge

Attachment II

BOD₅, TSS and Phosphorus Monitoring Frequency Reduction Evaluation

The criteria for this review were taken from EPA's April 1996 guidance, "Interim Guidance for Performance-based Reduction of NPDES Permit Monitoring Frequencies," and the Department's May 1999 draft guidance. The more restrictive criteria were used when the guidance from the two documents differ, with one exception that is discussed later.

Parameters covered by this review include BOD₅ during the non-waste load allocation season, TSS and phosphorus. The current permit specifies a daily monitoring frequency for BOD₅ and TSS, and twice weekly for phosphorus.

This review covers parameters with monthly average effluent limits. EPA's guidance does not provide a methodology for evaluating parameters with maximum permit limits only. (EPA's evaluation compares the long-term average discharge of a parameter to its monthly average limit.) Therefore, monitoring frequencies for pH, and BOD₅ during waste load allocation seasons are not included in this review.

While EPA's guidance does not provide a methodology for evaluating compliance with a 12-month rolling average limit, this review addresses phosphorus. The 12-month rolling average phosphorus limit and twice weekly monitoring requirement approximates a monthly average limit with a monitoring requirement of nine times per month. That is, averaging 104 results to demonstrate compliance with an annual average limit is roughly equivalent to averaging 9 results to demonstrate compliance with a monthly average limit. In either case, monitoring is performed on approximately 29 percent of the total number of days available for monitoring.

Timing of Decision

A permit reissuance is currently being drafted. Any change in monitoring requirements can be accommodated with the permit reissuance.

Entry Criteria for Participation

1. Facility Enforcement History

Criminal Actions (all environmental statutes)

- Rhinelander Paper Company, Inc. was not criminally convicted under Federal or State environmental statutes of falsifying monitoring data or committing violations that presented an imminent and substantial endangerment of public health or welfare.
- Rhinelander Paper was not convicted of any other criminal violation under any Federal or State environmental statute.
- No individual, while employed by Rhinelander Paper was convicted of a criminal violation under any Federal or State environmental statute.

Civil Judicial Actions (Clean Water Act/ WPDES related)

No civil judicial action with respect to the Clean Water Act and Rhinelander Paper's current WPDES permit occurred in the last year.

Administrative Actions (Clean Water Act/ WPDES related)

No Administrative Penalty Order (APO) or Administrative Order (AO) is currently in effect or will be in effect when the Rhinelander Paper Company, Inc. permit is reissued.

2. Parameter-by-Parameter Compliance

Reporting Violations and Significant Noncompliance during the Last Two Years

- No reporting violations, with respect to the DMRs, occurred during the years 2001 and 2002.
- The Rhinelander Paper had no significant noncompliance violations of BOD₅ effluent limitations (technology-based) during the years 2001 and 2002.
- The Rhinelander Paper had no significant noncompliance violations of TSS effluent limitations the years 2001 through 2002.
- The Rhinelander Paper had no significant noncompliance violations of the phosphorus effluent limitation for the years 2001 through 2002.

Effluent Violations during the Last Year

- No violation of BOD₅ effluent limitations (technology-based) occurred during 2002.
- No violation of TSS effluent limitations occurred during 2002.
- No violation of the phosphorus effluent limitation occurred during 2002.

3. Parameter-by-Parameter Performance History

Long-term Average Discharge Values

- The long-term average (LTA) of the Rhinelander Paper BOD₅ discharge equals 885 pounds per day. (The LTA was calculated by averaging Sampling Point 018 monthly average discharge values for 2001 and 2002.)
- The LTA of the Rhinelander Paper TSS discharge equals 816 pounds per day. (The LTA was calculated by averaging Sampling Point 018 monthly average discharge values for 2001 and 2002.)
- The LTA of the Rhinelander Paper phosphorus discharge equals 0.49 mg/L. (The LTA was calculated by first deriving a flow-proportional monthly average concentration for the discharges via Sampling Points 004, 011, 012 and 016 for 2001 and 2002. The LTA was then calculated by averaging the flow-proportional monthly averages.)

Ratio of Long-term Effluent Average to Monthly Average Limit

- The ratio of the BOD₅ LTA to Rhinelander Paper's monthly average technology-based effluent limitation equals 26.4 percent ($885 \text{ lbs/day} \div 3,349 \text{ lbs/day} \times 100$).
- The ratio of the TSS LTA to the Rhinelander Paper's monthly average technology-based effluent limitation equals 27.9 percent ($816 \text{ lbs/day} \div 2,922 \text{ lbs/day} \times 100$).
- The ratio of the phosphorus LTA to the Rhinelander Paper's "monthly" average technology-based effluent limitation equals 49 percent ($0.49 \text{ mg/L} \div 1 \text{ mg/L} \times 100$).

4. Monitoring Frequency Recommendations

- Since the ratio of the BOD₅ LTA to the BOD₅ monthly average limit (technology-based) is less than 50 percent, but greater than 25 percent, Table 1 in EPA's guidance suggests that the monitoring frequency may be reduced from daily to three times per week. (This reduction is applicable only to the non-waste load allocation season.)
- Since the ratio of the TSS LTA to the TSS monthly average limit is less than 50 percent, but greater than 25 percent, Table 1 in EPA's guidance suggests that the monitoring frequency may be reduced from daily to three times per week.
- Since the ratio of the phosphorus LTA to the phosphorus “monthly” average limit is less than 50 percent, but greater than 25 percent, Table 1 in EPA's guidance suggests that monitoring may be reduced from 29 percent of the possible sampling days to 7 percent. That is, from twice per week to twice per month.
- The Department's guidance suggests a minimum monitoring frequency of 5 times per week for BOD₅, TSS, and phosphorus since Rhinelander Paper has an effluent flow rate greater than 2 MGD. (Rhinelander Paper's LTA for flow at Sampling Point 018 was 11.23 MGD.)

The Department's guidance is based on the assumption that the monitoring frequency for phosphorus equals that for BOD₅. This is not the case for industrial dischargers. Phosphorus monitoring frequencies for pulp and paper mills range from daily to weekly.

5. Residency Criteria for Continued Participation

EPA's guidance specifies that to remain eligible for monitoring frequency reductions, the permittee:

- Must not have any significant noncompliance violations of effluent limitations for the parameters for which reductions have been granted;
- Must not fail to submit discharge monitoring reports; and
- Must not be subject to a new, formal enforcement action.

6. Relative Monitoring Frequencies

This factor of the Department's guidance suggests that the monitoring frequency for a parameter should be indirectly proportional to the averaging period of the parameter's effluent limitation. For example, parameters with weekly average limits should be monitored more frequently than parameters with monthly average limits.

Averaging periods and monitoring frequencies for parameters included in the proposed permit reissuance are provided below.

Limit Averaging Period	Parameter	Monitoring Frequency
Daily Maximum or Daily Minimum	BOD ₅ at 004 and 011 (during WLA season) pH at 004 pH at 011 Temperature at 004	Daily Daily (proposed) Daily Daily
Daily Maximum and Monthly Average	BOD ₅ at 004 and 011 TSS at 004 and 011	5 Times per Week (proposed) 5 Times per Week (proposed)
12-Month Rolling Average	Phosphorus at 004 and 011	Weekly (proposed)

Reducing the monitoring frequencies of BOD₅, TSS and phosphorus does not appear to be inconsistency with Department guidance for relative monitoring frequencies. More frequent monitoring is required for those parameters with limits for shorter averaging periods.

7. Variability of the Treatment Process

Neither fluctuation in influent loadings to Rhinelander Paper's wastewater treatment plant nor variability of treatment efficiency can be evaluated since influent data are not available. However, the variability of effluent quality is not high as demonstrated by a coefficient of variation of 34 percent for BOD₅, 51 percent for TSS and 54 percent for total phosphorus at Sampling Point 011. (The coefficient of variation is found by dividing the standard deviation by the mean and multiplying the resulting quotient by 100. Coefficients of variation were calculated from daily discharge values for 2001 and 2002. EPA has found that a coefficient of variation of 60 percent is a typical level of variation for effluent data. A coefficient of variation of less than 60 percent indicates less than typical effluent variability.)

8. Ease of Performing the Test

There is no reason to believe that Rhinelander Paper's wastewater treatment plant will be inadequately staffed or improperly operated and maintained should the monitoring frequencies for BOD₅ and TSS are reduced from daily to five times weekly.

Special Considerations

Only those special considerations from EPA's guidance that are applicable to Rhinelander Paper's discharge of BOD₅ and TSS are listed below.

- **Discontinuous Data:** Rhinelander Paper continuously reported its effluent data for the years 200 and 2001. The Mill's wastewater discharge is neither intermittent nor short-term.
- **Exceptions:** The discharge of BOD₅, TSS and phosphorus from Rhinelander Paper does not appear to be particularly critical from the standpoint of protecting human health, endangered species or a sensitive aquatic environment.

Conclusion

A reduced monitoring frequency of 5 times per week is proposed for BOD₅ (during the non-waste load allocation season) and TSS, and weekly for phosphorus at Sampling Point 011 under the following conditions:

- That the following footnote, or one similar, is included in the reissued permit:

Continued Eligibility for Reduced Monitoring Frequencies: If the permittee exceeds technology-based effluent limitations for BOD₅, TSS or phosphorus, fails to submit discharge

monitoring reports or is subject to formal enforcement action, the Department may modify this permit without public notice to increase the monitoring frequency for BOD₅, TSS or phosphorus.

- That the monitoring frequency for BOD₅ during waste load allocation seasons remains daily.
- That Rhinelander Paper's eligibility for reduced monitoring is reevaluated when the permit is reissued in five years.
- That Rhinelander Paper monitor BOD₅ on the same day at Sampling Points 004 and 011.
- That Rhinelander Paper monitor TSS on the same day at Sampling Points 004 and 011.

Attachment III

Calculation of the 2,3,7,8-TCDD Toxicity Equivalent

In its application for permit reissuance, Rhinelander Paper submitted sample results for dioxin and furan congeners in the discharge from Outfall 011. The Department used the results to calculate a 2,3,7,8-TCDD toxicity equivalence concentration as shown below.

Section NR 106.16, Wis. Adm. Code, specifies the following equation for calculating the 2,3,7,8-TCDD toxicity equivalence concentration:

$$[TEC]_{tcdd} = \sum [C]_x [TEF]_x [BEF]_x$$

where: $[TEC]_{tcdd}$ = 2,3,7,8-TCDD toxicity equivalence concentration in the effluent;

$[C]_x$ = concentration of congener "x" in the effluent;

$[TEF]_x$ = toxicity equivalency factor for congener "x"; and

$[BEF]_x$ = bioaccumulation equivalency factor for congener "x."

When a congener is not detected, a zero may be used in the above equation for the concentration of the congener.

The calculation using the results from the permit reissuance application is summarized in the following table:

Congener	$[TEF]_x$	$[BEF]_x$	$[C]_x$	$[C]_x [TEF]_x [BEF]_x$
2,3,7,8-TCDD	1.0	1.0	4.9	4.9
1,2,3,7,8-PeCDD	0.5	0.9	<1.9	0
1,2,3,4,7,8-HxCDD	0.1	0.3	<3.1	0
1,2,3,6,7,8-HxCDD	0.1	0.1	2.2	0.022
1,2,3,7,8,9-HxCDD	0.1	0.1	2.5	0.025
1,2,3,4,6,7,8-HpCDD	0.01	0.05	<3.6	0
OCDD	0.001	0.01	28	0.00028
2,3,7,8-TCDF	0.1	0.8	5.1	0.408
1,2,3,7,8-PeCDF	0.05	0.2	<1.8	0
2,3,4,7,8-PeCDF	0.5	1.6	<1.6	0
1,2,3,4,7,8-HxCDF	0.1	0.08	3.8	0.0304
1,2,3,6,7,8-HxCDF	0.1	0.2	2.3	0.046
1,2,3,7,8,9-HxCDF	0.1	0.6	<1.2	0
2,3,4,6,7,8-HxCDF	0.1	0.7	<1.9	0
1,2,3,4,6,7,8-HpCDF	0.01	0.01	4.8	0.00048
1,2,3,4,7,8,9-HpCDF	0.01	0.4	2.4	0.0096
OCDF	0.001	0.02	<6.2	0
$[TEC]_{tcdd} = \sum [C]_x [TEF]_x [BEF]_x =$				5.4 pg/L

Since none of the seventeen dioxin and furan congeners were detected in the retest of the discharge from Outfall 001, the $[TEC]_{tcdd}$ for the second test equals 0 and the average of the two tests equals 2.7 pg/L.

Attachment IV

Technology-based Effluent Limits for BOD₅ and TSS

Technology-based Effluent Limits: From s. NR 284.12(1), Wis. Adm. Code:

Subcategory	BOD ₅ (lbs BOD ₅ per ton of production)		TSS (lbs TSS per ton of production)	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
Nonintegrated Tissue Paper	12.5	22.8	10.0	20.5
Nonintegrated Fine Paper	8.5	16.4	11.8	22.0

Calculation of Current Effluent Limits: The Rhinelander Paper's current TSS effluent limits are based on the historical production rate of 291.8 TPD of tissue paper and 0.3 TPD of fine paper. This production occurred during the period from June 1987 through May 1998.

TSS:

$291.8 \text{ TPD} \times 10.0 \text{ lbs/ton} + 0.3 \text{ TPD} \times 11.8 \text{ lbs/ton} = 2,922 \text{ lbs TSS/day}$ Monthly Average

$291.8 \text{ TPD} \times 20.5 \text{ lbs/ton} + 0.3 \text{ TPD} \times 22.0 \text{ lbs/ton} = 5,988 \text{ lbs TSS/day}$ Daily Maximum

The basis of Rhinelander Paper's current BOD₅ effluent limits has been lost. The production rates upon which the BOD₅ limits are based predates those used to derive the TSS limits. When BOD₅ and TSS limits were recalculated using production rates from June 1987 through May 1998, only the TSS limits were changed in the permit. This was due to the fact that the TSS limits actually decreased, but the BOD₅ limits increased. Antidegradation considerations prevented the implementation of the newer BOD₅ limits.

Attachment V

Wastewater Treatment Plant Sludge Data

Table 1. Amounts of Sludge Disposed¹

Year	<u>Disposal Method</u>		Total Amount of Sludge Disposed (yd ³)
	Land Applied (yd ³)	Landfilled (yd ³)	
1996	14,673	8,778	23,451
1997	15,549	10,185	25,734
1998	17,661	9,771	27,432
1999	28,177	5,396	33,573
2000	24,881	6,139	31,020
2001	31,438	5,080	36,518
2002	27,697	5,843	33,540

¹ This information was taken from the “Annual Land Application Report” (3400-55) and “Other Methods of Use/Disposal Report” (3400-52).

Table 2. Sludge Monitoring Results – Form 3400-49

Parameter	<u>Monitoring Results¹</u>		
	Mean ²	Range	Number of Results
Total Solids	25 %	21.4 – 28.1 %	n = 20
Total Kjeldahl Nitrogen (Dry Wt)	1.89 %	1.1 – 3.0 %	n = 20
Copper (Dry Wt)	22 mg/kg	16 – 35 mg/kg	n = 6
Zinc Dry (Dry Wt)	29 mg/kg	24 – 38 mg/kg	n = 6
Heptachlor (Dry Wt)	<8.7 µg/kg	2 – 20 µg/kg	n = 6 (3 non-detects)

¹ Unless otherwise noted, these monitoring results were taken from “Characteristic Report, Form 3400-49, which were submitted by Rhinelander Paper for the years 1998 through 2000.

² The detection limit is used for a non-detectable test result and the reported value is used for test results that fall between the LOQ and LOD when calculating the mean.

³ Maximum pollutant concentrations for high quality domestic sewage sludge (s. NR 204.07 (5)(c), Table 5, Wis. Adm. Code) equal 1,500 mg/kg (dry weight) for copper and 2,800 mg/kg (dry weight) for zinc. High quality, domestic sewage sludge is exempt from cumulative loading limits.

Table 3. Sludge Monitoring Results – Nutrients, Inorganics and Detected Organics

Parameter	Monitoring Results ¹	Parameter	Monitoring Results ¹
Ammonia (as N)	0.014 %	Methyl –2-naphthalene	81 µg/kg
Phosphorus (as P)	0.44 %	Naphthalene	6.4 µg/kg
pH	8.0 s.u.	Phenanthrene	15 µg/kg
Chloride	170 mg/kg	Pyrene	11 µg/kg
Oil & Grease	3,400 mg/kg	Di-n-butylphthalate	88 µg/kg
Chloroform	180 µg/kg	Bis(2-ethylhexyl)phthalate	160 µg/kg
Anthracene	4.8 µg/kg	α-BHC	26 µg/kg
Fluoranthene	18 µg/kg	δ-BHC	8.4 µg/kg (LOQ = 12 µg/kg)
Methyl-1-naphthalene	4.8 µg/kg	γ-BHC	16 µg/kg

¹ These monitoring results were submitted by Rhinelander Paper on August 30, 2001 in response to the permit requirement for a priority pollutant scan. The sludge sample was collected on June 20, 2001

Table 4. Sludge Monitoring Results – Dioxins and Furans

Parameter	Monitoring Results ¹	Parameter	Monitoring Results ¹
2,3,7,8-TCDD	<0.60 ng/kg	2,3,7,8-TCDF	<0.70 ng/kg
1,2,3,7,8-PeCDD	<2.7 ng/kg	1,2,3,7,8-PeCDF	<1.2 ng/kg
1,2,3,4,7,8-HxCDD	<17 ng/kg	2,3,4,7,8-PeCDF	<1.6 ng/kg
1,2,3,6,7,8-HxCDD	<16 ng/kg	1,2,3,4,7,8-HxCDF	<2.3 ng/kg
1,2,3,7,8,9-HxCDD	<16 ng/kg	1,2,3,6,7,8-HxCDF	<2.8 ng/kg
1,2,3,4,6,7,8-HpCDD	12 ng/kg	1,2,3,7,8,9-HxCDF	<3.8 ng/kg
OCDD	87 ng/kg	2,3,4,6,7,8-HxCDF	<11 ng/kg
		1,2,3,4,6,7,8-HpCDF	<3.3 ng/kg
		1,2,3,4,7,8,9-HpCDF	<5.1 ng/kg
		OCDF	<8.6 ng/kg

¹ These monitoring results were submitted by Rhinelander Paper on August 30, 2001 in response to the permit requirement for a priority pollutant scan. The sludge sample was collected on June 20, 2001

Table 5. Sludge Monitoring Results – Metals

Parameter	Monitoring Results ¹	Criteria for High Quality Sludge ²
Antimony (Dry Wt)	<3.9 mg/kg	–
Arsenic (Dry Wt)	<3.5 mg/kg	41 mg/kg
Beryllium (Dry Wt)	0.23 mg/kg (LOQ = 0.55 mg/kg)	–
Cadmium (Dry Wt)	<0.48 mg/kg	39 mg/kg
Chromium (Dry Wt)	240 mg/kg	–
Chromium, Hexavalent (Dry Wt)	15 µg/kg	–
Copper (Dry Wt)	27 mg/kg	1,500 mg/kg
Cyanide, Total (Dry Wt)	0.38 mg/kg (LOQ = 0.51 mg/kg)	
Lead (Dry Wt)	<11 mg/kg	300 mg/kg
Mercury (Dry Wt)	<52 µg/kg	17 mg/kg
Nickel (Dry Wt)	6.1 mg/kg	420 mg/kg
Selenium (Dry Wt)	<2.6 mg/kg	100 mg/kg
Silver (Dry Wt)	<0.91 MG/KG	–
Thallium (Dry Wt)	<2.1 mg/kg	–
Zinc Dry (Dry Wt)	36 mg/kg	2,800 mg/kg

¹ These monitoring results were submitted by Rhinelander Paper on August 30, 2001 in response to the permit requirement for a priority pollutant scan. The sludge sample was collected on June 20, 2001

² Maximum pollutant concentrations for high quality, domestic sewage sludge (s. NR 204.07 (5)(c), Table 5, Wis. Adm. Code). High quality, domestic sewage sludge is exempt from cumulative loading limits.

Table 6. Cumulative Metals Loadings

Parameter	Sludge Concentration (Dry Wt) ¹	<u>Acceptable Levels</u> NR 214 ² NR 204 ³	Quantity Applied ⁴	Site Lifetime
Arsenic	<3.5 mg/kg	– 36 lbs/acre	<0.14 lbs/acre	– >260 years
Cadmium	<0.48 mg/kg	4.5 lbs/acre 34 lbs/acre	<0.019 lbs/acre	>240 years >1,800 years
Copper	27 mg/kg	110 lbs/acre 1339 lbs/acre	1.1 lbs/acre	100 years 1,200 years
Lead	<11 mg/kg	445 lbs/acre 268 lbs/acre	<0.44 lbs/acre	>1000 years >610 years
Mercury	<52 µg/kg	– 15 lbs/acre	<0.0021 lbs/acre	– >7,100 years
Nickel	6.1 mg/kg	45 lbs/acre 375 lbs/acre	0.24 lbs/acre	190 years 1,600 years
Selenium	<2.6 mg/kg	– 89 lbs/acre	<0.10 lbs/acre	– >890 years
Zinc	36 mg/kg	225 lbs/acre –	1.4 lbs/acre	160 years –

¹ Metal concentrations were submitted by Rhinelander Paper on August 30, 2001 in response to the permit requirement for a priority pollutant scan. The sludge sample was collected on June 20, 2001

² Maximum cumulative loadings for industrial wastewater treatment plant sludge at the most limiting soil cationic exchange capacity of <5 meq/100g (s. NR 214.18 (4)(g), Table 4, Wis. Adm. Code).

³ Lifetime cumulative loadings for municipal wastewater treatment plant sludge (s. NR 204.07 (5)(c), Table 2, Wis. Adm. Code).

⁴ A sludge application rate of 20 dry tons per acre per year, the maximum applied according to Rhinelander Paper's sludge management plan, was assumed in the calculation of loadings.

ADDENDUM

WPDES Discharge Permit Reissuance Fact Sheet

General Information

Permittee	Wausau-Mosinee Paper Corporation Rhineland Paper Company, Inc.
Facility Address:	Rhineland Paper Company, Inc. 515 West Davenport Street Rhineland, Wisconsin 54501
WPDES Permit No.	WI-0003026-7
Date of Public Notice	July 3, 2003

Comments on Proposed Permit

Rhineland Paper Company, Inc.

On August 1, 2003, Rhineland Paper Company submitted by e-mail the following comments on the public noticed permit. On August 5, 2003, the Department received a letter from Rhineland Paper with the same comments.

- Monitoring requirements for dioxins and furans at Sampling Points 011 (combined primary and secondary treatment system effluents) and 017 (wastewater treatment system sludge) should be eliminated.
- Rhineland Paper should not be required to monitor for total residual chlorine at Sampling Point 004 (contact cooling water) should the discharge qualify for the noncontact cooling water exclusion pursuant to s. NR 106.10 (1), Wis. Adm. Code.
- Monitoring requirements for total residual chlorine at Sampling Point 011 should be eliminated.
- Standard Requirement 5.2.2, Unscheduled Bypassing, should be modified to be consistent with s. NR 205.07 (1)(u), Wis. Adm. Code.
- Technology-based effluent limits for BOD₅, TSS and phosphorus should not be applied to the discharges from Outfalls 004, 016 (river water clarifier drainage) and 021 (river water wet well drainage).
- Change reference in footnote 2.2.6.4, Waste Load Allocation Requirements, from “Table 2.2.2.” to “Table 2.2.6.”

Changes Made to the Public Noticed Permit prior to Issuance

Permit Effective Date and Compliance Dates

Due to a delay in permit issuance, the Department extended the issued permit’s effective date, expiration date and compliance dates by three months. Specifically, the issued permit becomes effective January 1, 2004 and expires December 31, 2008, rather than October 1, 2003 and September 31, 2008 as proposed in the public noticed permit. The Department also extended by three months the effective date of total residual chlorine effluent limitations at Sampling Point 004, all dates in the compliance schedule for the chlorine effluent limitations, and all dates in the mercury pollutant minimization program schedule.

Permit Modification without Public Notice

The public noticed permit identifies several permit conditions that the Department may modify without public notice. Most of these permit modifications, however, are not exempt from public notice in accordance with s. NR 203.015, Wis. Adm. Code. To comply with the administrative rule, the Department removed from the issued permit references to permit modification without public notice that were inconsistent with the rule.

Eliminating references to permit modification without public notice does not mean that alternate permit conditions have also been removed from the permit. Those alternate permit conditions that were clearly defined in the public noticed permit remain in the issued permit. When necessary, the Department clarified the circumstances and timing under which alternate permit conditions would become effective. For example, alternate monitoring requirements for Sampling Point 004 take effect on the first day of the first month following written verification by the Department's Basin Engineer that Rhineland Paper has eliminated all process wastewaters except noncontact cooling waters from the discharge. Alternate permit conditions that are retained in the issued permit include:

- Reduced monitoring requirements at Sampling Point 004 should Rhineland Paper eliminate all process wastewaters except noncontact cooling waters from the Outfall 004 discharge (as discussed above);
- Elimination of effluent limitations and the compliance schedule for total residual chlorine at Sampling Point 004 should Rhineland Paper qualify for the s. NR 106.10 (1) noncontact cooling water exemption;
- Elimination of all monitoring requirements and effluent limitations at Sampling Point 004 should Rhineland Paper eliminate all process wastewaters including noncontact cooling waters from the Outfall 004 discharge;
- Elimination of storm water control requirements should the Department issue, with Rhineland Paper's consent, a general storm water permit for the mill; and
- Increased monitoring at Sampling Points 004, 011 and 018 (representing the combined discharge from Outfalls 004, 011, 012, 016 and 021) for BOD₅, TSS or phosphorus when the effluent limitation for the parameter is exceeded. (While requiring a permit modification, this change could be implemented without public notice pursuant to s. NR 203.015.)

The Department also removed those references to permit modification without public notice that addressed reducing mercury monitoring at Sampling Point 011 and eliminating the mercury pollutant minimization program. The issued permit requires monthly mercury monitoring for the first two years of the permit's term with quarterly monitoring thereafter. The issued permit also states that Rhineland Paper may request a permit modification, which will require a public notice, to reduce the mercury monitoring frequency for mercury to quarterly after at least twelve representative results have been generated. Such a reduction in mercury monitoring is consistent with s. NR 106.145 (3)(a) 6, Wis. Adm. Code.

The issued permit also makes it clear that the compliance schedule for implementing a mercury pollutant minimization program becomes effective only when an effluent limitation for mercury is necessary under the procedures specified in s. NR 106.145(2), Wis. Adm. Code. Conversely, if after the first 24 months of mercury monitoring an effluent limitation is not necessary, Rhineland Paper is not required to implement a pollutant minimization program and the compliance schedule does not become effective. In either case, modification of the permit is not required.

Dioxin and Furan Limitations and Monitoring Requirements

In the public noticed permit, the Department proposed monitoring requirements for the seventeen 2,3,7,8-substituted dioxin and furan congeners (i.e., the polychlorinated dibenzo-*p*-dioxins and polychlorinated dibenzofurans with chlorine substitutions in, at a minimum, the 2, 3, 7, and 8 positions) in wastewater treatment system effluent and sludge. The Department proposed the dioxin and furan monitoring requirements in response to effluent monitoring results submitted by Rhineland Paper.

Prior to public notice of the proposed permit, Rhineland Paper submitted dioxin and furan test results for two effluent samples collected at Sampling Point 011. Several of the 2,3,7,8-substituted dioxin and furan

congeners were detected in the first effluent sample. None of the seventeen congeners were detected in the second effluent sample.

Due to questionable test results for the first effluent sample, the Department proposed effluent and sludge monitoring in the public noticed permit to verify the presence or absence of dioxins and furans. The Department did not propose dioxin and furan effluent limitations.

Following public notice of the proposed permit, the laboratory that performed the dioxin and furan testing concluded that a source within the laboratory contaminated Rhineland Paper's first effluent sample. While the laboratory reported only "trace level contamination", none of the dioxins and furans were detected above trace levels. (See the attached case narrative provided by the laboratory.) Therefore, the Department concludes that test results for the first effluent sample are not representative of Rhineland Paper's discharge and should not be used when the Department evaluates the need for effluent limitations and monitoring requirements.

Based on the results of Rhineland Paper's second effluent sample, the Department concludes that effluent limitations and further effluent monitoring for dioxins and furans are not warranted. Therefore, the issued permit contains neither effluent monitoring requirements nor effluent limitations for dioxins and furans.

The issued permit requires Rhineland Paper to monitor for dioxins and furans in its wastewater treatment system sludge, however. Rather than semiannual monitoring for one year followed by annual monitoring for the remaining permit term as proposed, the issued permit requires one test for dioxins and furans during the permit's term. The Department will use the results from this single test when it evaluates Rhineland Paper's land application program during the next permit reissuance.

Chlorine Monitoring at Sampling Point 004

Contrary to Rhineland Paper's request, the Department retained in the issued permit the monitoring requirement for total residual chlorine at Sampling Point 004 once the mill qualifies for the noncontact cooling water exclusion pursuant to s. NR 106.10 (1).

While qualifying for the noncontact cooling water exclusion precludes the imposition of a chlorine effluent limitation, it does not alter the fact that chlorine is present in the discharge. Therefore, the Department believes that monitoring requirements for total residual chlorine are appropriate even in the absence of an effluent limit. Chlorine monitoring results will also aid the Department in its evaluation of the mill's qualification for the noncontact water exclusion when the permit is reissued.

Chlorine Monitoring at Sampling Point 011

Contrary to Rhineland Paper's request, the Department retained the monitoring requirement for total residual chlorine at Sampling Point 011.

Prior to public notice of the proposed permit, Rhineland Paper tested its primary and secondary clarifier effluents for total residual chlorine. While residual chlorine was detected in secondary clarifier effluent, organic contaminants in the Lake States Yeast Plant effluent may have caused interference in the chlorine test and produced false positives. It seems very unlikely that total residual chlorine can pass through activated-sludge treatment without reacting with the organic material that is present in abundance. A possible exception is during the chlorination of return activated sludge, which is a common treatment for filamentous bacteria. Therefore, the public noticed permit proposed a daily monitoring requirement for total residual chlorine for days during which Rhineland Paper chlorinates its return activated sludge.

The Department clarified language in the issued permit to make it clearer that total residual chlorine monitoring is required only when Rhineland Paper chlorinates its return activated sludge. Since Rhineland Paper has reduced the frequency of chlorination, the total residual chlorine monitoring requirement should not be excessively burdensome.

Unscheduled Bypassing

In its comments, Rhineland Paper correctly points out that the public noticed permit's Standard Requirement 5.2.2, Unscheduled Bypassing, is inconsistent with s. NR 205.07 (1)(u), Wis. Adm. Code. As proposed, Standard Requirement 5.2.2 reflects current federal rules on unscheduled bypassing (see Part 40 CFR 122.41(m)(4)(1)). The Department has reached an agreement with EPA to use the federal bypass language in WPDES permits. Therefore, to avoid EPA's possible objection to the issuance of the permit, the Department has issued Rhineland Papers permit without changing Standard Requirement 5.2.2.

Application of Technology-based Effluent Limits to Outfalls 016 and 021

Contrary to Rhineland Paper's request, the issued permit imposes technology-based effluent limitations on the discharges from Outfalls 004, 016 and 021.

The Department believes that applying technology-based effluent limitations to all process wastewater discharges is appropriate. Since EPA's definition of process wastewaters for pulp and paper mills covers wastewaters from the treatment of intake water (40 CFR 430.01 (m)), the Department also believes that technology-based effluent limitations in the Rhineland Paper permit should be applied to the discharges from Outfalls 016 and 021, as well as Outfalls 004, 011 and 012. Unlike the public noticed permit, however, the issued permit makes it clear that the technology based effluent limits are no longer applicable to Outfall 004 once all process wastewaters other than noncontact cooling water have been removed from the discharge.

Correction of Typographical Error

In response to Rhineland Paper's comment, the Department changed the issued permit's reference to the effluent limitations table for Sampling Point 018 from "Table 2.2.2." to "Table 2.2.6."

Other Comments

Mercury Intake Monitoring

Neither the public noticed permit nor the issued permit requires Rhineland Paper to monitor the water that it withdraws from the Wisconsin River for mercury. Nevertheless, the Department strongly encourages Rhineland Paper to collect and analyze intake water samples for mercury in accordance with ss. NR 106.145 (9) and (10), Wis. Adm. Code. Such monitoring will provide valuable information with respect to evaluating the need for and derivation of water quality-based effluent limitations for mercury.

Uncertainty of Analytical Results for Dioxins and Furans

As stated earlier, one of Rhineland Paper's effluent samples was contaminated by a laboratory source during the analysis for dioxins and furans. Effluent samples from other mills have also exhibited laboratory contamination. Therefore, the Department believes that further scientific investigation should be undertaken to assure results submitted to the Department are accurate and reliable. The Department encourages Rhineland Paper to participate in the investigation that was organized by the Wisconsin Paper Council in cooperation with the Department and will be managed by the National Council for Air and Stream Improvement.

Prepared by _____

Date Signed _____